

CARLETON UNIVERSITY

1959-1960 CALENDAR



FACULTY OF ARTS AND SCIENCE

SCHOOL OF PUBLIC ADMINISTRATION

SCHOOL OF ENGINEERING

DAY AND EVENING DIVISIONS

HOW TO REGISTER

- New full-time students enrolling for a degree, diploma, or certificate will take all of these steps.
 - New part-time students enrolling for a degree, diploma, or certificate will take steps 1, 2 and 5.
 - Returning full-time students will take steps 4 and 5.
 - All other students, including returning part-time undergraduates and graduate students, and part-time students not enrolling for a degree, diploma, or certificate, take step 5 only.
1. Complete application for admission on form available from the Registrar's Office. Applications should be submitted to the Registrar well in advance of term opening.
 2. Attach certificates of former schooling (Junior Matriculation and any studies pursued subsequently) to application for admission, or arrange for them to be sent to the Registrar.
 3. When application has been approved, (a) arrange for physical examination by own physician and (b) have him report results to the University on the Personal Health Record form available from the Registrar's Office. This report must be completed and submitted to the University before final registration.
 4. Prior to fall registration *each year*, submit evidence of having had a chest X-ray within six months prior to the opening of classes. This may be arranged, free of charge, at the May Court Clinic, 374 Besserer Street, Ottawa, any time after May 1st. (Carleton students may be examined, except in July, on Tuesday, Wednesday, or Thursday, 2 to 4 p.m.) If examined elsewhere, furnish evidence of a negative report. (See also p. 23.)
 5. During the appropriate registration period specified under The Academic Year (p. 3), come to the University to (a) arrange final selection of subjects, (b) complete registration forms, (c) pay fees, (d) receive class and library admission cards, and (e) complete required aptitude tests.
 6. Full-time students enrolling for the first time are to report to the University, Tuesday morning, September 15, at 9 o'clock.
- University office and library hours are listed inside the back cover.

As this Calendar is published several weeks before the opening of the session, the University reserves the right to make whatever changes circumstances may require, including cancellation of particular courses.

CARLETON UNIVERSITY

**Eighteenth Annual Calendar
Day and Evening Divisions
for the academic year 1959 - 1960**

**Rideau River Campus
Colonel By Drive
Ottawa 1**

Telephone: CEntral 5-5161

**Glebe Building
First Avenue at Lyon, Ottawa 1, Canada**

TABLE OF CONTENTS

How to Register.....	Inside Front Cover
The Academic Year.....	3
Historical Statement; University Charter.....	4
Chancellor, President and Vice-Chancellor, Board of Governors.....	6
Officers of Administration.....	7
Senate of the University.....	9
Officers of Instruction.....	10
Summary of Day and Evening Courses.....	18
Pre-professional Courses.....	19
Admission by Equivalent Examination.....	20
University Services and Facilities:	
Class Hours.....	21
Course Numbers.....	21
Facilities.....	21
Student Activities.....	22
Student Services.....	22
Military Training.....	25
Fees.....	27
Withdrawal and Refund.....	28
Financial Aid for Students.....	29
General Regulations:	
Classification of Students.....	49
Credit for Senior Matriculation Courses.....	49
Substitution for Prescribed Subjects.....	49
Course Load.....	49
Attendance.....	50
Standing.....	50
Failure and Repetition.....	51
Examinations.....	52
Proficiency in English.....	54
Library Regulations.....	54
Academic Costume.....	55
Details of Courses Offered:	
Arts.....	56
Admission Requirements.....	56
Course Requirements:	
Bachelor of Arts.....	57
Commerce.....	60
Admission Requirements.....	60
Course Requirements.....	61
Journalism.....	63
Admission Requirements.....	64
Course Requirements.....	65
Public Administration, School of.....	68
Bachelor of Arts with Honours in Public Administration.....	69
Certificate in Public Service Studies.....	71
Graduate Diploma in Public Administration.....	72
Master of Arts in Public Administration.....	73
Science.....	75
Admission Requirements.....	75
Course Requirements:	
Bachelor of Science.....	75
Engineering.....	78
Admission Requirements.....	79
Course Requirements.....	80
Honours Courses.....	84
Graduate Program.....	87
Institute of Canadian Studies.....	89
Details of Subjects.....	91
College Office Hours; Library Hours.....	173

THE ACADEMIC YEAR

Summer Session

1959

- | | |
|----------------|--|
| May 27, 28, 29 | Registration for summer session (7 to 9 p.m.). |
| June 1 | Summer session classes begin. |
| July 15 | Last day for applications for supplemental examinations. |
| Aug. 3 | Civic Holiday. No classes.* |
| Aug. 20 | Last day of summer session classes. |
| Aug. 24, 25 | Summer session examinations. |
- *Classes will meet instead on the following day.

Winter Session

- | | |
|---|---|
| Aug. 31 - Sept. 4 | Supplemental examinations. |
| Sept. 7 | Labour Day. University closed. |
| Sept. 15 - 18 | Registration for classes in day and evening divisions: |
| Tuesday, Sept. 15
2-4 and 7-9 p.m. | Registration of new students. |
| Wednesday, Sept. 16
2-4 and 7-9 p.m. | Registration of new students. |
| Thursday, Sept. 17
2-4 and 7-9 p.m. | Registration of returning students. |
| Friday, Sept. 18
2-4 and 7-9 p.m. | Registration of returning students. |
| Tuesday, Sept. 15-
Friday, Sept. 18 | } Registration of evening students. |
| Sept. 21 | Classes begin in all courses, day and evening. |
| Oct. 5 | Last day for late registration. |
| Oct. 12 | Thanksgiving Day. No classes. |
| Oct. 13 | Last day for change from one course to another. |
| Oct. 17 | Last day for applications for summer session supplemental examinations. |
| Nov. 21 | Summer Session supplemental examinations. |
| Dec. 12 | Last day of classes in the first term, day and evening divisions. |
| Dec. 14-19 | Mid-year examinations. |

1960

- | | |
|---------------------|--|
| Jan. 4 | Second term begins in day and evening divisions. |
| Jan. 4-8 (evenings) | Final examinations in first term half courses. |
| April 15-17 | Easter week-end. University closed. |
| April 14 | Last day of classes in the second term, day and evening divisions. |
| April 25-May 7 | Final examinations in day and evening divisions. |
| May 27 | Convocation for the conferring of degrees. |

HISTORICAL STATEMENT

Carleton University, established by The Ottawa Association for the Advancement of Learning in the summer of 1942, opened its first classes on September 21 in that year. In the first three years, teaching was done in evening classes only, in rented premises, and by part-time instructors. Instruction was given in the subjects of Grade XIII (Ontario) and first year university, with a few courses in the elements of public administration.

On March 19, 1945, day classes in matriculation courses were opened for the benefit of war veterans. In the following years, as the number of veterans diminished, civilian students were admitted to day classes.

In September, 1945, courses in Journalism and in the first year of Engineering were added to those already provided in Arts, Science and Commerce, and all these programs were consolidated in a Faculty of Arts and Science.

The first degrees of the University, three Bachelor of Journalism and three Bachelor of Public Administration, were conferred on October 23, 1946.

On February 6, 1947, the University sustained a severe blow in the loss by death of Henry Marshall Tory, D.Sc., LL.D., D.C.L., F.R.S.C., first President of Carleton University and the leader more responsible than any other for the success attained by the University in the first five years of its existence. On February 18, 1947, Murdoch Maxwell MacOdrum, M.A., Ph.D., Vice-President of the University, was appointed by the Board of Governors to succeed Dr. Tory as President.

Upon Dr. MacOdrum's death on August 1, 1955, following eight years of outstanding leadership, the Board of Governors appointed James Alexander Gibson, M.A., D.Phil., Dean of the Faculty of Arts and Science, as Acting President of the College.

On January 31, 1956, Claude Thomas Bissell, M.A., Ph.D., F.R.S.C., Vice-President of the University of Toronto, was appointed President, taking office on July 1, 1956, and serving until June 30, 1958.

On July 4, Arnold Davidson Dunton, D.Sc., LL.D., was appointed by the Board of Governors to succeed Dr. Bissell as President.

In the summer of 1947 the University announced its plans for the organization of complete four-year Courses and five-year Honours Courses leading to the degrees of Bachelor of Arts, Bachelor of Science and Bachelor of Commerce. The third year in all these courses was made available to students of the University in September, 1947, the fourth year in September, 1948, and the fifth year of certain Honours Courses in September, 1949. The first degrees in Arts, Science and Commerce were conferred in May 1949, and the first Honours degrees in May 1950. A program of studies leading to a Graduate Diploma in Public Administration was introduced in 1952. A School of Public Administration was established in 1953 and in the following year candidates were accepted for the M.A. degree in that field. The first M.A. degree was conferred in May, 1955.

By May 1958 the University had conferred 1078 Bachelor's degrees. On February 26, 1954, it conferred its first honorary degree of LL.D.

on Dag Hammarskjöld, Secretary-General of the United Nations; on May 21, 1954, the second on Sir Douglas Copland, High Commissioner for Australia in Canada; and on May 18, 1956, the third on Hugh Llewellyn Keenleyside, Director-General, Technical Assistance Administration, United Nations, and an original member of the Board of Governors. Recipients at the May Convocation in 1958 were Professor J. W. T. Spinks, O.B.E., F.R.S.C., Professor of Chemistry and Dean of Graduate Studies, University of Saskatchewan, and Professor J. Tuzo Wilson, Department of Geophysics, University of Toronto, and President of the Canadian Committee for the International Geophysical Year.

On May 17, 1957, to commemorate the organization of The Canada Council, honorary degrees were conferred upon Professor H. Northrop Frye, Chairman of the Department of English in Victoria College in the University of Toronto, and A. Y. Jackson, Canadian artist.

On November 23, 1954, Dr. C. J. Mackenzie was installed as second Chancellor of the University, succeeding Dr. H. S. Southam, who had served as first Chancellor from June 19, 1952 until his death on March 27, 1954.

The first full-time teaching appointments in the ranks of lecturer, assistant professor, associate professor, and professor became effective on September 1, 1947. These appointments, and all subsequent appointments to the teaching staff, have carried from the beginning the appropriate privileges of professional tenure.

As of June 19, 1943 the University became an incorporated body. The act of incorporation, together with the instrument, became the Charter of the University. In order that the power to grant degrees should be specifically recited in a charter document, the University applied to the Legislature of the Province of Ontario for this and other academic powers which were subsequently incorporated into *The Carleton College Act*, 1952. By the instrument of incorporation (now merged into the Charter) and consequently amended in April, 1957 by *The Carleton University Act*, 1957, Carleton University is endowed with university powers, with "authority to grant in all branches of learning any and all university degrees and honorary degrees, and diplomas" and "power to establish and maintain such faculties, schools, institutes, departments, chairs and courses of instruction as shall be deemed meet by the Board."

On June 11, 1952, the University was made a member of the National Conference of Canadian Universities, and on February 26, 1953, a member of the Association of Universities of the British Commonwealth.

The University is non-sectarian and co-educational. Its conduct and management is vested in a Board of Governors.

Enrolment in the winter session 1958-59, in day and evening divisions, included 754 full-time students and 950 part-time students in courses offered for academic credit, and 350 registered in non-credit extension courses; a total of 2,054.

CHANCELLOR

CHALMERS JACK MACKENZIE, C.M.G., M.C., B.E., M.C.E., D.SC.
D.ENG., LL.D., D.C.L., F.R.S., F.R.S.C., M.E.I.C.

PRESIDENT AND VICE-CHANCELLOR

A. DAVIDSON DUNTON, D.SC., LL.D.

BOARD OF GOVERNORS

CHAIRMAN

JAMES E. COYNE, B.A., B.C.L.

SECRETARY

CLARENCE CECIL GIBSON, Q.C.

TREASURER

VICTOR S. CASTLEDINE, ESQ.

MEMBERS EX-OFFICIO

The Chancellor

The President and Vice-Chancellor

ELECTIVE MEMBERS

Retire 1959

A. A. CRAWLEY, F.C.A.

C. C. GIBSON, Q.C.

COL. C. M. EDWARDS, D.S.O.

H. R. T. GILL, Esq.

C. F. ELDERKIN, Esq.

D. G. HARTLE, M.A., PH.D.

CHARLES GAVSIE, C.B.E., Q.C.,
B.A., LL.M.

ALAN JARVIS, B.A.

Retire 1960

D. M. COOLICAN, Esq.

A. B. R. LAWRENCE, Q.C.

J. E. COYNE, B.A., B.C.L.

T. R. MONTGOMERY, Esq.

C. FRASER ELLIOTT, C.M.G., Q.C.

FRANK G. PATTEN, B.A., B.PAED.,
F.C.I.S.

C. H. EVERETT, Esq.

The Honourable Mr. Justice I. C.
Rand, B.A., LL.B., LL.D.

KENNETH A. GREENE, O.B.E.

Retire 1961

G. E. BEAMENT, O.B.E., E.D., Q.C.

The Honourable Norman McL.
Paterson, F.C.G.S.

V. S. CASTLEDINE, Esq.

JOHN E. ROBBINS, M.A., PH.D.

W. M. CONNOR, Esq.

E. W. R. STEACIE, O.B.E., PH.D.,
D.SC., LL.D., F.R.S., F.R.S.C.

C. H. HULSE, Esq.

A. B. MACLAREN, Esq.

The Honourable Brooke Claxton,
P.C., D.C.M., Q.C., B.C.L., LL.D.

A. E. MACRAE, B.SC., LL.D.

OFFICERS OF ADMINISTRATION

PRESIDENT AND VICE-CHANCELLOR

A. DAVIDSON DUNTON,
D.SC. (Laval), LL.D. (Saskatchewan)

DEAN OF THE FACULTY OF ARTS AND SCIENCE AND CHAIRMAN, DIVISION OF HUMANITIES AND SOCIAL SCIENCES

JAMES ALEXANDER GIBSON,
B.A. (British Columbia), M.A., B.LITT., D.PHIL. (Oxford)

DIRECTOR OF THE SCHOOL OF PUBLIC ADMINISTRATION

RONALD OLIVER MACFARLANE, M.A. (Queen's), PH.D. (Harvard)

ASSOCIATE DEAN OF THE FACULTY OF ARTS AND SCIENCE, AND CHAIRMAN, DIVISION OF SCIENCE

MORAY ST. JOHN MACPHAIL,
B.A. (Queen's) M.A. (McGill), D.PHIL. (Oxford), F.R.S.C.

DIRECTOR OF THE SCHOOL OF ENGINEERING

JOHN RUPTASH,
B.SC. (Alberta), M.A.S.C., PH.D. (Toronto)

REGISTRAR

JOHN ALEXANDER BUCHANAN McLEISH,
M.A. (McGill), PH.D. (Cornell)

ASSISTANT REGISTRAR

ELIZABETH M. BUCKLEY, B.A. (Queen's)

STUDENT PERSONNEL OFFICER

JEAN ALEXANDRA LOATES,
B.A. (Carleton)

MEDICAL ADVISER

ERIC L. DAVEY,
M.D., D.P.H. (Toronto)

BURSAR

FREDERICK JAMES TURNER, B.COM., M.A. (Toronto), F.C.I.S.

ACCOUNTANT

ALBERT B. LAROSE, B.COM. (Carleton)

ADMINISTRATIVE ASSISTANT

CECIL V. HOTSON, B.J. (Carleton)

LIBRARIAN

HILDA G. GIFFORD, B.A., B.L.S. (McGill)

DIRECTOR OF ATHLETICS, AND STUDENT AFFAIRS ADVISER

NORMAN D. FENN, B.S., M.ED. (Springfield)

KEITH N. HARRIS, B.A., B.PH.E. (Queen's), Assistant Director of Athletics

DEVELOPMENT OFFICER

DONALD S. SWAIN, B.J. (Carleton)

SENATE OF THE UNIVERSITY

MEMBERS EX-OFFICIO

A. DAVIDSON DUNTON, D.SC., LL.D.,
President and Vice-Chancellor

Professor JAMES A. GIBSON, M.A., B.LITT., D.PHIL.
Dean of the Faculty of Arts and Science

Professor M. S. MACPHAIL, M.A., D.PHIL., F.R.S.C.,
Associate Dean of the Faculty of Arts and Science

Professor R. OLIVER MACFARLANE, M.A., PH.D.
Director of the School of Public Administration

Professor WILFRID EGGLESTON, M.B.E., B.A., F.A.G.S.

Professor H. H. J. NESBITT, M.A., PH.D., D.SC., F.L.S., F.Z.S.

Professor W. J. McDUGALL, B.A., C.A.

Professor H. SCOTT GORDON, M.A.

Professor JOHN M. MORTON, M.SC., M.A., PH.D.

Professor ALLAN M. MUNN, M.SC., PH.D., F.R.S.A.

Professor A. M. BEATTIE, A.M., PH.D.

Professor DONALD C. ROWAT, A.M., PH.D.

Professor JOHN E. RIDDELL, B.ENG., M.SC., PH.D., F.R.S.C.

MEMBERS APPOINTED BY THE BOARD OF GOVERNORS UPON NOMINATION BY THE SENATE

F. J. ALCOCK, PH.D., F.R.S.C., F.G.S.A.

FRANK H. UNDERHILL, M.A., LL.D., F.R.S.C.

W. KAYE LAMB, M.A., PH.D., LL.D., F.R.S.C.

WALTER B. HERBERT, B.A., LL.B.

Associate Professor JOHN RUPTASH, B.SC., M.A.SC., PH.D.,
Director of the School of Engineering

OFFICERS OF INSTRUCTION

WINTER 1959-60

Professors, Associate Professors, Assistant Professors, Lecturers

Douglas G. Anglin, B.A. (Toronto), M.A., D.PHIL. (Oxford)
Associate Professor of Political Science

Alexander Munro Beattie, B.A. (Toronto), A.M., PH.D. (Columbia),
Professor of English

Isobel Law Bayly, B.SC. (Carleton), M.A. (Toronto),
Lecturer in Biology

R. E. V. Bismuth, D.ÈS.L. (Lille),
Assistant Professor of French

Thomas Newton Brewis, M.COM., PH.D. (Durham),
Associate Professor of Economics

T. James S. Cole, B.SC. (Eng.) (London), B.SC. (Carleton), A.C.G.I.,
Assistant Professor of Physics

Robert L. Comeau, M.A. (St. Francis Xavier),
Lecturer in Economics

Gordon S. Couse, B.A. (McMaster),
Associate Professor of History

Wilfrid Eggleston, M.B.E., B.A. (Queen's), F.A.G.S.,
Professor of Journalism

H. Edward English, B.A. (British Columbia), PH.D. (California),
Associate Professor of Economics

David M. L. Farr, B.A. (British Columbia), M.A. (Toronto),
D.PHIL. (Oxford),
Associate Professor of History

Norman D. Fenn, B.S., M.ED. (Springfield),
Special Lecturer in Psychology

Charles Paul Fleischauer, A.M., PH.D. (Harvard),
Assistant Professor of French

Allan Guy Forman, B.A., M.SC. (British Columbia),
Assistant Professor of Chemistry

Jeremy C. Forster, M.A. (Cambridge),
Lecturer in Spanish

Muni C. Frumhartz, B.A. (Toronto), A.M. (Columbia),
Assistant Professor of Sociology (on leave of absence, 1959-60)

R. Bruce Gamble, B.SC. (McGill),
Lecturer in Mathematics

J. G. Garrard, B.A. (Oxford),
Lecturer in Russian

- Amal Chandra Ghosh, M.Sc. (Calcutta),
Assistant Professor of Physics (on leave of absence, 1959-60)
- James Alexander Gibson, B.A. (British Columbia),
M.A., B.LITT., D.PHIL. (Oxford),
Professor of History
- E. E. Goldsmith, DIPL. ING. (Berlin), D.I.C. (London), M.E.I.C., A.M.I.E.E.,
Associate Professor of Engineering
- H. Scott Gordon, B.A. (Dalhousie), A.M. (Columbia),
Professor of Economics
- John Hart, B.Sc., PH.D. (London), A. INST.P.,
Associate Professor of Physics
- Patrick Arthur Hill, B.Sc. (London), PH.D. (Columbia), F.G.S., F.R.G.S.,
F.P.S.,
Assistant Professor of Geology
- James M. Holmes, B.Sc. (New Brunswick), M.A. (Western Ontario),
PH.D. (McGill),
Associate Professor of Chemistry
- Kenneth Hooper, B.Sc. (London), F.G.S.,
Lecturer in Geology
- Michael Hornyansky, B.A. (Toronto), M.A. (Oxford),
Assistant Professor of English
- William Irwin Illman, B.A., M.Sc. (Western Ontario),
Assistant Professor of Biology (Botany)
- Pauline Jewett, M.A. (Queen's), PH.D. (Harvard),
Associate Professor of Political Science
- George B. Johnston, M.A. (Toronto),
Associate Professor of English
- Stephen F. Kaliski, B.A. (British Columbia), M.A. (Toronto),
Assistant Professor of Economics
- Wilfred H. Kesterton, B.A. (Queen's), B.J. (Carleton),
Assistant Professor of Journalism
- Paul MacDonell Laughton, B.A. (Toronto), M.Sc. (Dalhousie),
PH.D. (Wisconsin),
Associate Professor of Chemistry
- Albert Harold Lightstone, B.Sc. (Carleton), M.A. (New Brunswick),
PH.D. (Toronto),
Assistant Professor of Mathematics
- G. Ross Love, M.A. (Western Ontario), PH.D. (Toronto),
Associate Professor of Physics
- Ronald Oliver MacFarlane, M.A. (Queen's), PH.D. (Harvard),
Professor of Political Science

- Moray St. John Macphail, B.A. (Queen's), M.A. (McGill),
D.PHIL. (Oxford), F.R.S.C.,
Professor of Mathematics
- David L. Matthews, B.SC. (Queen's), PH.D. (Princeton),
Lecturer in Physics
- Michel Pierre Mélése, D. ÈS L. (Sorbonne),
Chevalier de la Légion d'Honneur,
Visiting Professor of French
- Robert L. McDougall, B.A. (British Columbia), M.A., PH.D. (Toronto),
Associate Professor of English
- William John McDougall, B.A. (Western Ontario), C.A.,
Professor of Accounting
- John Alexander Buchanan McLeish, M.A. (McGill), PH.D. (Cornell),
Research Associate Professor of Education
- K. D. McRae, B.A. (Toronto), A.M., PH.D. (Harvard),
Associate Professor of Political Science
- Stanley R. Mealing, B.A. (Alberta), M.A., B.LITT. (Oxford),
Assistant Professor of History
- Gordon Clark Merrill, M.A. (McGill), PH.D. (California),
Associate Professor of Geography
- Dalton H. Minty, B.SC., (MECH. ENG.), (Manitoba),
Assistant Professor of Engineering
- John S. Moir, M.A., PH.D. (Toronto),
Assistant Professor of History
- John M. Morton, M.SC. (Dalhousie), M.A., PH.D. (Princeton),
Professor of Chemistry
- Allan M. Munn, B.SC. (Queen's), M.SC., PH.D. (McGill), F.R.S.A.,
Professor of Physics (on leave of absence, 1959-60)
- Herbert H. J. Nesbitt, B.A. (Queen's), M.A., PH.D. (Toronto),
D.SC. (Leiden), F.L.S., F.R.E.S., F.E.S.A., F.Z.S.,
Professor of Biology
- F. H. Northover, M.A. (Cambridge), PH.D. (London),
Associate Professor of Mathematics
- Ernst M. Oppenheimer, B.A. (Toronto), A.M. (Columbia), PH.D. (Harvard),
Assistant Professor of German
- John A. Porter, B.SC. (Econ.) (London),
Associate Professor of Sociology
- R. Putnaerglis, MECH.ENG. (Latvia), M.ENG. (McGill), P.ENG.,
Associate Professor of Engineering

- Lawrence M. Read, B.A. (Dalhousie), M.A. (Toronto),
Assistant Professor of Religion
- John Evans Riddell, B.ENG., M.SC., PH.D. (McGill), F.R.S.C., F.G.S.A., F.G.A.C.,
Professor of Geology
- Marcel Rioux, B.A. (Laval), M.A. (Montreal), DIP.ETH. (Paris),
Assistant Professor of Sociology
- Donald C. Rowat, B.A. (Toronto), A.M., PH.D. (Columbia),
Professor of Political Science
- John Ruptash, B.SC. (Alberta), M.A.SC., PH.D. (Toronto),
Associate Professor of Engineering
- Richard James Semple, M.A. (Toronto), PH.D. (Princeton),
Assistant Professor of Mathematics
- F. Ellenor M. Swallow, M.A. (Alberta), PH.D. (Cornell),
Assistant Professor of Classics
- Donald Alan Smith, M.A., PH.D. (Toronto),
Assistant Professor of Biology (Zoology)
- Peter L. Smith, B.A. (British Columbia), M.A., PH.D. (Yale),
Lecturer in Classics
- S. G. Tackaberry, C.B.E., B.A.SC. (Toronto), M.E.I.C.,
Assistant Professor of Engineering
- R. Stephen Talmage, B.A. (Oxford),
Lecturer in Philosophy
- James S. Tassie, B.A. (McMaster), M.A., PH.D. (Toronto),
Associate Professor of French (on leave of absence, 1959-60)
- James M. Thompson, M.A. (Toronto),
Lecturer in Philosophy
- Hans Treffner, B.SC. (Sir George Williams),
Lecturer in Mathematics
- W. Tupper, M.SC.,
Lecturer in Geology
- Frank Robert Wake, B.A., PH.D. (McGill),
Associate Professor of Psychology
- Bernard Wand, B.A. (Queen's), M.A., PH.D. (Cornell),
Associate Professor of Philosophy
- James C. S. Wernham, M.A. (Aberdeen and Cambridge),
S.T.M. (Union),
Associate Professor of Philosophy
- Gordon James Wood, M.A. (Toronto),
Assistant Professor of English

- Russell Allen Wendt, M.A. (Alberta),
Associate Professor of Psychology
- D. R. Wiles, B.Sc. (Mount Allison), M.Sc. (McMaster), Ph.D. (M.I.T.),
Assistant Professor of Chemistry
- Whitman Wright, B.A.Sc. (Toronto),
Assistant Professor of Engineering
- J. Perry Young, B.A. (Queen's), D. ès L. (Bordeaux),
Assistant Professor of French
- William L. Young, M.Sc., Ph.D. (McGill),
Assistant Professor of Geology

Sessional Lecturers, Instructors, Demonstrators, and others

- F. J. Alcock, B.A. (Toronto), Ph.D. (Yale), F.R.S.C., F.G.S.A.,
Special Lecturer in Geology*
- Jennifer Arcand, B.A. (McMaster), M.A. (New Brunswick),
Sessional Lecturer in English*
- J. Douglas Ayers, B.A., B.Ed. (British Columbia), Ph.D. (Toronto),
Sessional Lecturer in Psychology*
- Frances Oakes Baldwin, B.A. (Saskatchewan), B.J. (Carleton),
Sessional Lecturer in Journalism*
- John A. Baycroft, M.A. (Cambridge),
Sessional Lecturer in Religion*
- W. G. Beattie, M.D. (Toronto), F.R.C.S.(C)
Research Associate in Biology*
- R. L. Beatty, B.A. (Toronto),
Sessional Lecturer in Mathematics*
- Desmond G. Bowen, B.A. (Carleton), M.A. (Queen's),
Instructor in History
- R. W. Boyle, M.A., Ph.D. (Toronto), F.R.S.C.,
Sessional Lecturer in Geology*
- Harold J. Breen, M.A., Ph.D. (Western Ontario),
Sessional Lecturer in Psychology*
- N. R. Brining, B.Com., C.A.,
Sessional Lecturer in Accounting*
- C. N. Brennan, B.Com. (British Columbia), M.S. (Columbia), C.A.,
Sessional Lecturer in Accounting*
- Mavis Brown, B.A. (Manitoba),
Sessional Lecturer in Mathematics*
- Elizabeth Butterill, B.A. (Western Ontario),
Demonstrator in Physics*

*Part time

- L. J. Byrne, M.A. (Toronto),
Sessional lecturer in Mathematics*
- D. A. Camfield, M.A. (Oxford),
Sessional Lecturer in German*
- A. A. Cattnach, Q.C., B.A. (Manitoba), LL.B. (Saskatchewan),
Sessional Lecturer in Public Law*
- Eric Cawdron,
Field Work Supervisor in Journalism*
- Lovell C. Clark, B.A. (Manitoba), M.A. (Toronto),
Sessional Lecturer in History*
- Murray E. Corlett, B.A. (Toronto),
Sessional Lecturer in Commercial Law*
- Charlotte Covington, B.A. (Grinnell),
Demonstrator in Physics*
- Douglas Keith Dale, B.A. (Queen's),
Sessional Lecturer in Mathematics*
- William R. Dymond, M.A. (Toronto), PH.D. (Cornell),
Sessional Lecturer in Economics*
- Simon L. Eckstein, B.A., B.R.E. (Yeshiva), M.A. (N.Y.U.),
Sessional Lecturer in Religion*
- R. T. Elworthy, M.B.E., B.SC., PH.D.,
Demonstrator in Chemistry*
- Gretl Fischer, B.A.,
Instructor in English
- Tom Foley,
Seminar Leader in Journalism*
- Eugene A. Forsey, M.A. (McGill and Oxford), PH.D. (McGill),
Sessional Lecturer in Political Science*
- Chester Frowde,
Field Work Supervisor in Journalism*
- James C. Gardner, B.A., M.ED. (Toronto),
Sessional Lecturer in Mathematics*
- Ronald Grantham, M.A. (British Columbia),
Sessional Lecturer in History*
- S. J. Handfield-Jones, M.A. (Oxford),
Sessional Lecturer in Economics*
- Barbara T. Harrison, M.SC.,
Demonstrator in Biology
- Gordon F. Henderson, Q.C., B.A. (Toronto),
Sessional Lecturer in Public Law*

*Part time

- Walter B. Herbert, B.A., LL.B. (Alberta),
Seminar Leader in Journalism*
- Frances Hobson, M.A.,
Sessional Lecturer in Mathematics*
- T. L. Hoy, M.A. (Toronto and Dalhousie)
Sessional Lecturer in Psychology*
- C. S. Juvet, B.COM. (Queen's), M.A. (Carleton),
Sessional Lecturer in Political Science*
- Frederick Karam, MUS.DOC. (Toronto), A.R.C.T.,
Sessional Lecturer in Music
- Burton F. Kelso, B.A. (Toronto), M.A. (Washington),
Sessional Lecturer in Geography*
- D. I. Lalkow, M.D. (Moscow),
Sessional Lecturer in Russian (Honorary)
- A. B. Larose, B.COM. (Carleton), C.A.,
Sessional Lecturer in Accounting
- A. B. Laver, M.A. (Queen's),
Sessional Lecturer in Psychology*
- June H. MacNeish, PH.B., A.M., PH.D. (Chicago),
Sessional Lecturer in Sociology*
- Mark McClung, B.A.,
Sessional Lecturer in Philosophy*
- Roderick C. McDonald, B.A.SC. (Toronto),
Sessional Lecturer in Engineering*
- F. H. McLearn, B.E. (Dalhousie), PH.D. (Yale), F.R.S.C., F.G.S.A.,
Sessional Lecturer in Geology*
- J. M. McQueen, M.A. (Toronto),
Honorary Lecturer in History
- Carman H. Milligan, MUS.BAC. (Toronto), M.MUS. (Rochester),
Sessional Lecturer in Fine Arts*
- Peter Mackenzie Millman, B.A. (Toronto), A.M., PH.D. (Harvard),
Sessional Lecturer in Astronomy*
- L. W. Morley, M.A., PH.D. (Toronto),
Sessional Lecturer in Geology*
- Violet E. Moyer, B.A.,
Instructor in English*
- Leslie H. Neatby, M.A. (Saskatchewan), PH.D. (Toronto),
Sessional Lecturer in Classics*
- B. R. Pelletier, M.SC., PH.D.,
Sessional Lecturer in Geology*
- Mary Anne Phillips, M.A. (Toronto),
Instructor in English*

- W. A. Plumstead, M.A.,
Sessional Lecturer in English
- Alan H. Portugal, B.Sc. (McGill), A.M. (Tufts),
Sessional Lecturer in Sociology*
- L. W. Rentner, B.A. (Toronto),
Sessional Lecturer in Mathematics*
- J. K. B. Robertson, B.A. (Queen's), M.A. (Toronto),
Sessional Lecturer in Fine Arts*
- P. Robinson, PH.D.,
Sessional Lecturer in Mathematics*
- M. Rukiewicz, CIV.ENG. (Warsaw),
Sessional Lecturer in Mathematics*
- Virginia Sawyer, A.B. (California), M.A. (Minnesota), M.B.A. (Chicago),
Sessional Lecturer in Economics*
- V. E. F. Solman, M.A., PH.D. (Toronto),
Sessional Lecturer in Biology*
- A. A. Sterns, LIC. COM. (St. Gallen), DR.RER.POL. (Berne),
Sessional Lecturer in Accounting*
- A. R. Veall, B.A. (McMaster),
Sessional Lecturer in Mathematics*
- Ruth M. Underhill, B.A. (Saskatchewan), M.A. (Toronto),
Instructor in English
- I. J. Vogelfonger, M.D., M.Sc.D., (John Casimir University, Lwow, Poland), F.I.C.S.,
Research Associate in Biology*
- Clifford J. Webster, B.A. (McMaster), B.Sc., ECON., M.A. (London),
Sessional Lecturer in Political Science*
- Fred E. Whitworth, B.A. (Saskatchewan), A.M., PH.D. (California),
Sessional Lecturer in Psychology*
- A. J. Wickens, M.Sc.,
Sessional Lecturer in Mathematics*
- Selva Wiley, B.A. (Marshall College), M.A. (Nebraska), PH.D. (Ohio State),
Sessional Lecturer in Geography*
- Peter J. Williams, M.A. (Cambridge),
Sessional Lecturer in Geography*
- Alice E. Wilson, M.B.E., B.A. (Toronto), PH.D. (Chicago), F.R.S.C.,
F.G.S.A.,
Sessional Lecturer in Geology*
- Carl M. Wolff, B.A. (Carleton),
Sessional Lecturer in German*

*Part time

SUMMARY OF DAY AND EVENING COURSES

FACULTY OF ARTS AND SCIENCE

DIVISION OF HUMANITIES AND SOCIAL SCIENCES

Bachelor of Arts (B.A.)—

Offered in both day and evening divisions. Details on pp. 56-59.

Bachelor of Arts with Honours—first two years offered in both day and evening divisions; last three years in day division only. *See also pp. 84-86.*

Bachelor of Arts with Honours in Public Administration (B.A.)—
Details on pp. 69-70.

First two years offered in both day and evening divisions; last three years in day division only.

Certificate in Public Service Studies (C.P.S.S.)—Details on p. 71.

Offered in day and evening divisions.

Graduate Diploma in Public Administration (Dip. Pub. Admin.)—
Details on pp. 72-73.

Offered in both day and evening divisions.

Master of Arts in Public Administration (M.A.)—Details on pp. 73-74.

Offered in day division only, except with permission.

Bachelor of Commerce (B.COM.)—Details on pp. 60-62.

Offered in both day and evening divisions.

Bachelor of Journalism (B.J.)—Details on pp. 63-67.

First two years offered in both day and evening divisions; last two years, and postgraduate year, offered in day division only.

DIVISION OF SCIENCE

Bachelor of Science (B.SC.)—Offered in both day and evening divisions. Evening candidates normally expected to take certain senior courses in day division. Details on pp. 75-77.

Bachelor of Science with Honours—first two years offered in both day and evening divisions; last three years in day division only. *See also pp. 84-86.*

Bachelor of Engineering (B.ENG.)—Details on pp. 78-83.

Offered in the day division only.

HONOURS COURSES

The new program is fully described on pp. 84-86.

GRADUATE PROGRAMS IN ARTS AND SCIENCE

Master of Arts (M.A.) and *Master of Science* (M.SC.); *Doctor of Philosophy* (PH.D.).

For a description of graduate offerings at Carleton University, please see pp. 87-88.

COURSES FOR THOSE WHO ARE NOT CANDIDATES FOR CERTIFICATE, DIPLOMA, OR DEGREE

Subjects in the curricula of the Faculty of Arts and Science and the School of Public Administration are open to persons who do not wish to study for a certificate, diploma, or degree, providing that they have the required background for those they choose.

As an extension service, non-credit courses in subjects of cultural and vocational value are open to members of the public. The Committee on Adult Education issues a number of bulletins describing this program. Copies can be obtained, on request, from the Registrar's Office.

COURSES IN CENTRES OUTSIDE OTTAWA

By agreement with other universities of Ontario, Carleton University is prepared to offer university courses in centres outside Ottawa in the counties of Carleton, Dundas, Grenville, Lanark and Renfrew, and to consider applications for academic credit for courses taken from other universities in other centres.

PRE-PROFESSIONAL COURSES

Students who plan to undertake further professional training after completion of their studies in Carleton University are invited to consult the Registrar for aid in selection of their courses.

Among the fields for which **preparatory** courses may be planned at Carleton are:

Graduate Studies in	Law	Accounting
Arts and Science	Theology	Architecture
Public Administration	Teaching	Engineering
Medicine	Library Science	Forestry
Dentistry	Social Work	Pharmacy
		Surveying (D.L.S.)

Special arrangements have been made for studies at Carleton in preparation for the examinations of the Society of Industrial and Cost Accountants of Ontario, and the Chartered Institute of Secretaries of Joint Stock Companies and other Public Bodies, and for entry to the Ontario College of Education.

Admission by Equivalent Examination

Examinations Equivalent to the Ontario Secondary School Graduation Diploma

The following certificates recognized as equivalent to the Ontario Secondary School Graduation Diploma may be accepted in so far as they meet the admission requirements of Carleton University (see p. 56).

Quebec	Quebec High School Leaving, or McGill Junior Matriculation
Alberta	Junior Matriculation (Grade XI)
British Columbia	Junior Matriculation (Grade XII)
Manitoba	Grade XI
New Brunswick	Junior Matriculation
Newfoundland	Grade XI
Nova Scotia	Junior Matriculation
Prince Edward Island	First Class License or Second Year Certificate from Prince of Wales College
Saskatchewan	Grade XI

Examinations Equivalent to Grade XIII (Canada and Great Britain)

The following certificates are recognized as equivalent to the Ontario Grade XIII certificate in the subjects in which at least fifty per cent has been made in each paper:

Quebec	Quebec Senior High School Leaving Certificate, or McGill Senior Matriculation
Alberta	Senior Matriculation (Grade XII)
British Columbia	Senior Matriculation (Grade XIII)
Manitoba	Grade XII
New Brunswick	Senior Matriculation
Nova Scotia	Senior Matriculation
Prince Edward Island	Honour Diploma of Third Year, Prince of Wales College
Saskatchewan	Grade XII
England, Northern Ireland, and Wales	The General Certificate of the various English Universities and the Welsh Joint Education Committee with passes in six subjects, of appropriate distribution, of which two must be at the Advanced Level.
Scotland	The Scottish Higher Leaving Certificate

Certificates from the United States and other lands are accepted in so far as they are equivalent.

UNIVERSITY SERVICES AND FACILITIES

CLASS HOURS

Most classes (day and evening) meet for three hours a week. Those involving laboratory work usually meet for that purpose for an additional three or four-hour period once a week.

Summer session classes usually meet for two and one-half hours on each of two evenings a week.

Class timetables are published separately for the day and evening divisions, and may be obtained from the Registrar's Office.

COURSE NUMBERS

In 1952 courses were numbered according to the following pattern:

- 50-99 Preparatory courses
- 100-199 Courses usually taken in the first year
- 200-299 Courses usually taken in the second year
- 300-399 Courses open to senior undergraduates or graduate students
- 500-599 Courses open to graduate students only.

In the section Details of Subjects (pp. 91 ff.) of this calendar, former course numbers are shown in brackets following new course numbers, e.g. Economics 210. [2].

FACILITIES

This year the University will move from its present buildings to a 130-acre campus of great natural beauty on the Rideau River. Three buildings, Science, Arts, and the Library, will be immediately available and in addition some athletic facilities are being provided.

The Henry Marshall Tory Building for Science, a contemporary five-level structure, will be fully equipped for Engineering, Biology, Chemistry, Geology, and Physics studies, classrooms for all students, and a cafeteria.

The Maxwell MacOdrum Library, large enough to accommodate 400 readers and 80,000 volumes, will also house the administrative offices of the University.

The Arts building, the Norman Paterson Hall, will provide many additional classrooms and seminar rooms of various sizes for students of the Division of Humanities and Social Sciences, as well as offices for professors.

These three buildings will be on three sides of the Main Court, the focal point of the University, and all will be connected by a tunnel.

Special interim facilities for student activities include rooms for Students' Council and student newspaper (The Carleton), dressing rooms and equipment rooms for athletics, small games rooms and lounges. Some space will be available on the Main Court, the balance in a field house a short distance away.

While major indoor athletic activity will continue to be carried out in gymnasiums of secondary schools, the University will have its own regular and practice fields on the Rideau River campus.

STUDENT ACTIVITIES

All students in the day and evening divisions of the University are members of, and pay the fees of, the Students' Association. The Students' Council, executive body of the Association, is elected by the students in the spring of each year.

Activities sponsored by the Students' Association, through its Council, include the publication of a weekly newspaper, *The Carleton*; dances and parties; women's, dramatics, radio, short story, poetry, choral, language and camera clubs; chess, bridge and sports clubs; commerce, science, and engineering societies; a debating society, a model parliament and political clubs; international affairs organizations and an international students' club; religious associations; welfare fund campaigns; and a wide variety of educational and recreational programs.

An Athletic Board, composed of representatives of faculty and students and responsible to the President, sponsors and supervises a program which includes the University band, recreational activities, intramural and intercollegiate activities.

STUDENT SERVICES

Health. Under the supervision of the University Medical Adviser, a Student Health Service is provided for the protection and promotion of the health of the student body. Its primary purposes are:

To supervise the health of all full-time students and to ascertain their fitness for academic work.

To investigate the physical fitness of all students who wish to participate in college athletic and recreational activities.

To provide a health consultation and advisory service for students. (Those with serious health defects are referred for treatment as necessary.)

To provide emergency treatment and medical care for athletic injuries and minor illnesses.

To plan a health education program designed to conserve and promote the overall health of the student body.

Prior to initial registration at the University, each full-time student is required to submit, on a personal health record form provided by the University, a certificate of medical examination performed by his family physician. Each year, in addition, a full-time student will submit evidence of having had a chest X-ray within six months prior to the opening of classes, or as an alternative to such chest X-ray a negative intracutaneous tuberculin skin test. Students electing to have the skin test in lieu of chest X-ray are advised to have such test conducted by the family physician at the time of the medical examination. Students who are tuberculin positive will be required to undergo a chest X-ray as above. Chest X-rays may be arranged, free of charge, at the May Court Clinic, 374 Besserer Street, Ottawa, at any time after May 1st. (Carleton students may be examined, except in July, on Tuesday, Wednesday, or Thursday, 2 to 4 p.m.) During the week of registration, September 15-18 inclusive, the Clinic will be set aside for Carleton Students from 9-11:30 a.m. Unless the X-ray has been arranged through the University, it will be necessary for the student to furnish evidence of a negative report. X-ray facilities for part-time students will be made available by the University, and such students are encouraged to have an annual chest X-ray.

(Students who object to these examinations on religious grounds will provide the Medical Adviser with a written statement of the grounds on which they object, following consultation with the Medical Adviser.)

Each year before participating in University athletic activities, each student will report to the Medical Adviser and obtain a certificate of medical fitness which will be submitted to the Director of Athletics.

The Medical Adviser will re-examine any student he considers should be given further attention, as indicated by his review of pre-registration health record forms. Any student requesting re-examination may avail himself of the services of the Medical Adviser who will be available in his office in the Maxwell MacOdrum Library at stated periods.

The University is not responsible for expenses incurred as a result of injuries sustained by students while participating in athletic activities. Information regarding available accident insurance may be had on request from the University Bursar.

Employment. The Student Placement Service in the Registrar's Office offers assistance to students in obtaining part-time employment during the academic year, full-time employment during the summer vacation period, and permanent employment upon graduation. Assistance is offered to alumni of the University at any time. Students and graduates are asked to consult the Student Personnel Officer for placement assistance.

The Student Placement Service cooperates closely with the National Employment Service and the Civil Service Commission of Canada.

Housing. The University has at present no residences of its own, but a housing registry is maintained by the Student Personnel Officer (Office of the Registrar), offering assistance to students wishing rooms or rooms with board.

Cost of room and board is about \$70 a month. A room with breakfast and dinner rents for about \$70 a month; with breakfast only, \$35-\$40; without meals, \$25-\$30; room with light housekeeping privileges, \$30-\$35.

Food. A canteen is located in the Science building.

Approximate Cost of One Year (8 months) at the University for a Student of Moderate Means

1. Tuition: Arts, Commerce, Journalism	\$ 425
(Except students majoring in Biology, Chemistry, Geology or Physics where the Science fee applies)	
Science	\$ 440
Engineering	\$ 490
2. Books, Instruments, and Supplies	\$40-100
(The maximum named is typical of second-year Engineering Students)	
3. Board and Room — 2 meals in home, luncheon in College Canteen	\$ 670
4. Clothes, Laundry, Entertainment, Transportation	220-300
Total	\$1335-1560

Counselling and Guidance. Services available to students are:

1. A series of *orientation lectures* on study methods, the use of the university library, the university curricula, and related topics are arranged for new students in the day division during the week of registration.
2. All undergraduates enrolling in the day division for the first time at Carleton University are required to take any tests deemed suitable for the orientation programme.
3. A library of *occupational information* is at the disposal of students, occasional lectures on specific occupational fields are arranged, and guidance in methods of seeking employment is provided.
4. Students are invited to seek assistance in their planning of educational programs, their choice of careers, and in the solution of their personal problems from: (a) their instructors; (b) administrative officers, particularly the Dean, the Associate Dean, the Registrar, Mr. Norman Fenn, B.S., M.ED., Student Affairs Adviser, and Mrs. Jean Loates, B.A., Student Personnel Officer.

5. Special and more extended counselling in career planning and personal problems may be obtained from Mr. Fenn, Student Affairs Adviser, and from F. R. Wake, B.A., PH.D., Associate Professor of Psychology, and Chairman of the Department of Psychology.

6. Faculty Adviser to Overseas Students: Dr. Charles Fleischauer is the Adviser to Overseas Students, and he may be consulted at any time by appointment at his office in the Department of French.

7. The Registrar, Dr. McLeish, is available for consultation each Monday evening from 7.15 to 8.30 p.m., in addition to his regular day-time office hours.

MILITARY TRAINING

Each of the Services enrolls undergraduates in reserve training programs designed to qualify cadets for commissions.

Each year is divided into two training periods, winter training of about two hours per week, and summer full-time training and service.

During the summer training period, cadets receive junior officers' pay (currently \$210 per month); rations, quarters, transportation, uniforms, and medical services are provided free.

During the winter training period, cadets may receive up to 16 days pay per academic year.

Upon successful completion of training, cadets are commissioned, and upon graduation they are eligible for transfer to Regular or Reserve components.

Students interested in these reserve training programs are requested to inquire of the service representatives listed below:

Armed

Forces Resident Staff Officer, Captain W. M. Jessup, Telephone
Office: CE 4-4123 or (9) 6-7623.

Navy: Lieutenant Commander R. J. Marin, R.C.N. (R)
Staff Officer, U.N.T.D.,

H.M.C.S. *Carleton*,

Dow's Lake, Ottawa, Ontario; Tel. CE 5-5389

Army: Officer Commanding, Major J. M. Holmes,
(Department of Chemistry).

Telephone CE 4-4123

Air Force: Wing Commander George Buxton; or

Squadron Headquarters, 162 Waller Street; Telephone
(9) 6-8615; or

Flight Lieutenant Paul Loughton, Carleton University
R.C.A.F. Representative (Department of Chemistry).
CE 5-3773.

REGULAR OFFICER TRAINING PLAN (R.O.T.P.)

The Armed Forces of Canada subsidize a limited number of undergraduate students who are willing to accept a military service obligation

as a commissioned officer under the provisions of Regular Officer Training Plan.

University students found acceptable will be enrolled in the service of their choice (Royal Canadian Navy, Canadian Army (Regular) or Royal Canadian Air Force), as an officer cadet on a career basis. Upon achievement of degree status and fulfilment of military training requirements, Officer Cadets are promoted to commissioned rank and required to serve a minimum of three years immediately thereafter in the service which sponsored their training. After such service, an officer may be released at his own request providing a period of national emergency does not exist.

A student may qualify for subsidization under this Plan if he:

- (a) is a Canadian citizen or British subject resident in Canada with the status of a landed immigrant;
- (b) has attained his 16th but not his 21st birthday on the 1st of January of the year of enrolment in university;
- (c) is physically fit for enrolment in the branch and service of his choice;
- (d) is single and intends to remain so during his officer cadet training period.

Successful applicants will receive financial assistance as follows:

Pay	\$63.00 per month
Living Allowance	\$65.00 per month
Holiday	Up to 30 days annually with full pay and allowances.

Tuition and other essential university fees	Provided by Department of National Defence.
---	---

Text-book and Instrument expenses	\$75.00 per year.
---	-------------------

Medical and Dental care expenses	Provided by Department of National Defence.
--	---

Uniforms and accoutrements	Provided by Department of National Defence.
--------------------------------------	---

Aircrew Trainees receive \$75.00 per month flying pay while undergoing summer training.

Further information and application instructions may be obtained from: Staff Officer, U.N.T.D., H.M.C.S. *Carleton*, Dow's Lake, Ottawa, Ontario. Phone (9) 4-5044.

FEES

TUITION FEES

The annual composite fee includes tuition, Students' Association, Athletics and Health Service fees, and where applicable laboratory, graduation, and summer survey camp fees.

Arts, Commerce, Journalism

Full-time students \$425.00

Part-time students (per subject) \$ 78.00

(except students majoring in Biology, Chemistry,
Geology or Physics where the Science fee applies)

Science

Full-time students \$440.00

Part-time students (per subject) \$ 82.00

Engineering

Full-time students \$490.00

Included in the above composite fee are the following:

	Part-time per subject	Full- time
Students' Association	1.50	17.50
Athletics .....	.50	5.50
Health Services	—	2.00

EXAMINATION FEES

- (a) Supplemental and special final examinations, written at Carleton University, per paper..... 5.00
- (b) Examinations written at a university centre other than Carleton University, when permitted..... 10.00

TRANSCRIPT FEE

For each transcript of academic record, except for the first two which are supplied free of charge..... 1.00

DEFERRED PAYMENT FEE

Payable when fees are paid in instalments:

	<i>In Two Instalments</i>	<i>In More Than Two Instalments</i>
(a) for half course .....	.50	1.00
(b) for 1, 1½, or 2 courses	1.00	2.00
(c) for more than two courses	2.50	5.00

Fees may be paid by any of the following plans:

1. Payment in full at the time of registration.
2. Payment in *two* instalments:
 - (a) At registration—½ of the total tuition, *plus* Miscellaneous Fees (where applicable), and Deferred Payment Fee (see above).
 - (b) At or before mid-session—the remaining half of the total tuition fee.

3. Payment in *five* instalments (winter session only):
 - (a) At registration— $\frac{1}{5}$ of the total tuition, *plus* Miscellaneous Fees (where applicable), and Deferred Payment Fee (see above).
 - (b) On the 15th of October, November, January and February— $\frac{1}{5}$ of the total tuition fee.

WITHDRAWAL AND REFUND

Students who are forced to withdraw from a course, or from the University, are required to notify the Registrar **in writing, or fill out the appropriate forms in his office**, and to give their reasons for withdrawal. The University assumes the obligation of carrying the student and accommodation on a yearly basis. Therefore:

- (a) All tuition credits and refunds will be made entirely at the pleasure of the University.
- (b) Credits or refunds will be granted only as follows:
 - (1) Cash refunds may be granted in cases where students are compelled to withdraw on account of serious and continued personal illness.
 - (2) In case a student who is regularly employed during the day is sent out of the city permanently by his employer or compelled so to change his working hours as to prevent his continuing at the University, a refund may be granted.
 - (3) Cash refunds may also be granted in cases where the student is compelled to withdraw for other personal reasons, provided that these reasons are satisfactory to the University authorities.
- (c) Tuition not refunded or used may, if a certificate of credit is secured from the Bursar, be applied upon subsequent courses pursued in the University, provided such courses are taken within two years of the date of withdrawal of the student.
- (d) Miscellaneous fees and Deferred Payment fees normally are not refundable.
- (e) The portion of the tuition fee refunded is determined **by the date of written application for refund**, not the date of withdrawal.
- (f) No application for refund will be considered if received after February 15 in the winter session, or after July 31 in the summer session.

FINANCIAL AID FOR STUDENTS

1. The University welcomes the offer of scholarships, prizes, medals, and bursaries. The Registrar will be glad to send, on request, information as to the functions of scholarships and bursaries, and also a statement of particular needs at present in the financial aid program of the University.
2. Scholarships, prizes, medals, bursaries, and loan funds may be accepted from donors at the discretion of Senate on appropriate recommendation of the President. Awards of scholarships, prizes, and medals will be made by Senate to qualified candidates of merit; but the Senate may withhold any such award if no candidates of merit present themselves. The award of scholarships, prizes, and medals shall be final when formally announced by the University.
3. The standing of students being considered for any such awards shall be determined on the basis of courses taken for credit and shall not take account of extra courses being taken for no credit.
4. (a) No limitation shall be placed upon the number of prizes and medals which any one student may win in any one year. (b) A student may be declared the winner of as many scholarships as he may win as a qualified candidate of merit but, in the case of awards carrying a major financial amount, such student will normally receive the proceeds only of the largest among these major amounts. (c) Winners of scholarships and prizes may resign the monetary value but retain the honour of such awards, and their names will be published as winners. In cases arising under 4(b) or 4(c), the monetary amounts so relinquished may be awarded *by reversion* if merited.
5. Students who may apply for entrance scholarships at colleges or universities other than Carleton University will not be restricted in applying for similar scholarships at Carleton University. They will be requested, however, to inform the University of such other applications.
6. Undergraduate scholarships and bursaries of \$200 or more which are under the jurisdiction of the University will ordinarily be paid in two instalments, one in October and one in January. The University reserves the right to withhold the payment of the second instalment if the attendance or conduct of the student is not satisfactory. Awards of less than \$200 will ordinarily be paid in one instalment, in October.
7. The University does not guarantee the award of any scholarship, prize, medal, or bursary other than those created from funds of the University. Those awards based upon gifts of individuals or associations other than the University will be forwarded only after the funds required have actually been received from the donors.

SCHOLARSHIPS

I. UNDERGRADUATE SCHOLARSHIPS TENABLE AT CARLETON UNIVERSITY

Union Carbide Canada Limited, Undergraduate Scholarships. (Next awarded, 1959)

Value \$500 a year until graduation. Open to graduates of secondary schools who (1) have outstanding scholastic records and personal reputation and are recommended by their school authorities, and (2) intend to enter business or industry and have the necessary talents and ambition for such a career.

One such scholarship was awarded to a student entering Carleton University in 1954. In 1956 another scholarship was awarded, and hereafter awards will be made to maintain two Union Carbide scholars in attendance at the University in all subsequent years.

Applications for 1959 will be required not later than May 15. Further information and appropriate application forms may be obtained from the Registrar.

Donor: Union Carbide Canada Limited. Established 1954.

Mercy Neal Southam Entrance Scholarships

Four \$500 scholarships will be awarded annually, if merited, to students entering the second year of Arts, Journalism, Commerce, or Science, or the first year of Engineering at Carleton University. Established in 1949 under the terms of a bequest of the late Wilson Mills Southam, the scholarships are in memory of his grandmother, Mercy Neal Southam.

Scholarship applications, accompanied by a formal application for admission to course, and supported by a letter of recommendation from the high school principal, must be submitted to the Registrar, Carleton University, not later than May 15, each year on forms available from the University. To be eligible, a student must be qualified academically and physically for admission without conditions to one of the courses named.

Candidates from the secondary schools must write at least *six* Ontario Grade XIII final examination papers in year of application and will be judged on their *eight* best papers. If there should be no eligible candidate from one of the Ottawa high schools named or from any of the other eastern counties schools, a scholarship may be awarded to one of the runners-up. Final selection will be made by the University Senate on recommendation by the Committee on Admission and Studies.

The scholarships will be paid in two instalments — \$250 applied to tuition in the fall of entry and, if the winner is still in attendance and making satisfactory progress, \$250 applied to tuition the next fall.

One each of the four Mercy Neal Southam Entrance Scholarships and of the three University Entrance Scholarships (described in succeeding paragraph) will be awarded, if merited, to the applicant with highest standing from each of the following: Glebe Collegiate Institute, Lisgar Collegiate Institute, Nepean High School, Ottawa High School of Commerce, Ottawa Technical High School, and Fisher Park High School, and one to the applicant with the highest standing from schools (other than those just named) in the counties of Renfrew, Lanark, Carleton, Russell, Prescott, Glengarry, Stormont, Dundas, Grenville, and Leeds.

University Entrance Scholarships

Three \$500 scholarships will be awarded annually, if merited, to students entering the second year of Arts, Journalism, Commerce, or Science, or the first year of Engineering, at Carleton University. The conditions of award and administration of these University Entrance Scholarships will be the same as those governing the Mercy Neal Southam Entrance Scholarships, as described in preceding paragraphs.

The Ottawa Citizen Scholarship

A scholarship valued at \$900 will be awarded annually, if merited, to a student entering Carleton University from a high school in any one of the following counties in the Ottawa district: nine in Ontario — Carleton, Dundas, Glengarry, Grenville, Lanark, Prescott, Renfrew, Russell and Stormont — and four in Quebec — Gatineau, Hull, Papineau and Pontiac.

Candidates with junior or senior matriculation may apply for admission to first or second year of Arts, Commerce, Journalism or Science.

Candidates with senior matriculation may apply for admission to Engineering.

A student admitted with junior matriculation standing will receive \$225 per year for a period of four years; a student admitted with senior matriculation standing will receive \$300 per year for a period of three years; always provided that, in both cases, the student is registered as a regular full-time student of Carleton University and maintains a satisfactory academic standing.

A candidate for this scholarship must present evidence of high scholastic attainment, together with a record of outstanding participation in the extra-curricular activities of his school.

Applications are to be addressed to: the Registrar, Carleton University, Ottawa, by May 15.

Donor: The Ottawa Citizen. Established 1955.

Ottawa Business and Professional Women's Club Scholarship

Value \$200. Awarded annually to a girl entering Carleton University with high matriculation standing from one of the Ottawa collegiates and high schools. Donor: Ottawa Business and Professional Women's Club. Established 1946.

School of Public Administration Scholarship

Value \$500. Awarded, preferably to a public servant, for full-time study toward the Certificate in Public Service Studies. For details regarding application, see p. 34.

Regional Entrance Scholarships

Value \$1000 each. Four are awarded annually, if merited, on the basis of outstanding achievement in secondary school studies, to students entering Carleton University with junior or senior matriculation standing—one from each of the following regions:

- (a) The provinces of British Columbia, Alberta, Saskatchewan and Manitoba, the Yukon and the Northwest Territories.
- (b) The province of Ontario.

(Students completing secondary school studies in any of the following Ottawa Schools will *not* be eligible: Glebe Collegiate Institute, Lisgar Collegiate Institute, Nepean High School, Fisher Park High School, Ottawa High School of Commerce, Ottawa Technical High School—they may apply for Mercy Neal Southam Entrance Scholarships, University Entrance Scholarships, and the Ottawa Citizen Scholarship.)

- (c) The province of Quebec.
- (d) The provinces of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland.

Each scholarship winner will have \$250 applied to the cost of tuition at the time of registration in his first year at Carleton University, and, if he is still in attendance and making satisfactory progress, \$250 at the time of registration in each succeeding year, not exceeding four years in all.

Scholarship applications, accompanied by a formal application for admission to course and supported by a letter of recommendation from the high school principal, must be submitted to the Registrar, Carleton University, not later than August 1st, on forms available from the University.

These scholarships were established by the University in 1952.

Canadian Legion and Ladies' Auxiliary Scholarships

The Dominion Command, Canadian Legion, B.E.S.L., offers two scholarships, valued at \$400 each, and the Ontario Command offers additional scholarships, valued at \$400 each, to be awarded to secondary school graduates entering university. They will be awarded only to persons who are eligible for membership in the Canadian Legion or to the children of deceased veterans or to the children of parents either of

whom is eligible for membership in the Canadian Legion. At least two additional scholarships will be awarded, if merited, to students resident in each Legion District of the Ontario Command, upon entry to a college or university in Ontario. Application should be made by June 30 to Ontario Provincial Command, Canadian Legion, 218-220 Richmond Street West, Toronto.

International Nickel Company Scholarship

One entrance scholarship has been established by The International Nickel Company of Canada, Limited, restricted to study in the fields of engineering, geology, geophysics, mathematics and physics. The scholarship covers tuition fees, a grant of \$300.00 to the student, as well as a cost-of-education supplement of \$500.00 to the University. The maximum award for a scholarship is \$1,200.00. Any graduate of a high school or the equivalent, or any student in his final high school year, who has good scholastic standing and personal reputation, is eligible to apply. It is awarded by the University Scholarships Committee on the basis of the applicant's record, character, and financial need. The scholarship is renewable annually to the student for a maximum of three additional academic years or, in certain cases, until graduation, whichever is the shorter period. Further details from the Registrar.

Donor: The International Nickel Company of Canada, Limited. Established 1956.

E. B. Eddy Company Continuing Scholarship

Value \$600 a year until graduation. This scholarship is open to graduates of secondary schools who have outstanding scholastic records. The scholarship will be retained, if merited, until graduation, at which time a second E. B. Eddy scholar will be named.

Donor: E. B. Eddy Company Limited. Established 1959.

Parfield Oils Limited, Scholarships

Three scholarships, of total value \$1200 annually, have been established by Parfield Oils (1952) Limited for competition among students entering Carleton University or undergraduates of the University. In addition, a sustaining fund of \$800 annually has been provided to help defray the cost to the University of educating the winning scholars.

The scholarship awards are:

1. One entrance scholarship of value \$600 to be awarded annually, if merited, to a student entering Carleton University with high standing in the senior matriculation examinations. The application for this scholarship, accompanied by a letter of recommendation from the

candidate's high school, is to be submitted to the Registrar of Carleton University not later than July 1 on forms available from the University.

2. Two scholarships of value \$300 each, to be awarded annually to an outstanding student progressing from one year of course to another in Carleton University.

Donor: Parfield Oils (1952) Limited, Ottawa, Canada. Established 1959.

Carleton Alumni Association Scholarships

Eight scholarships, of value \$500 each, have been provided for 1959-60 for undergraduates passing from one year of course to another at Carleton University with high standing. Certain of the scholarships are reserved for students in honours.

Donor: The Carleton University Alumni Association.

Lord Dundonald Chapter (I.O.D.E.) Scholarship

Value \$100. Awarded annually to a student of superior standing and general proficiency, entering the final year of a degree course at Carleton University.

Donor: Lord Dundonald Chapter, I.O.D.E. Established 1956.

Ottawa Women's Canadian Club War Memorial Scholarship

Value approximately \$100.00. Awarded annually to a student progressing from first to second year in Carleton. Preference is given to veterans or their children. Endowed 1946.

Clendinnen Scholarship in Biology

Value \$100. Awarded annually to an outstanding student proceeding from the fourth to the fifth year of the honours course in biology at Carleton University. Established 1951, in memory of Mr. and Mrs. T. E. Clendinnen, by their daughter.

Canadian Club of Ottawa Scholarship

Value \$200. To foster interest in public affairs, Canadian citizenship and Canadian history, this award is presented annually to a student entering the final year of a degree course who has shown outstanding promise in studies and work relating to national development in Arts and Letters, Humanities and the Social Sciences. Donor: The Canadian Club of Ottawa. Established 1952.

Gavin Scott Macfarlane Memorial Scholarship

Value \$200. To be awarded in 1959-60 to an outstanding student, preferably in honours, who is proceeding from one year of course to another in Carleton University.

First donated 1957, by Mrs. G. S. Macfarlane in memory of her husband, Lieutenant-Colonel Gavin Scott Macfarlane.

Ottawa Woman's Club Scholarship

Value \$100. Awarded annually to an outstanding student progressing from one year of course to another in Carleton University, preference to be given to women students. Donor: The Ottawa Woman's Club. Established 1952.

University Women's Club of Ottawa Scholarship

Value \$100. Awarded annually to a deserving student progressing from one year of course to another, preference to be given to a woman student where other qualifications are equal. Established 1952, in honour of Dr. Alice E. Wilson, by The University Women's Club of Ottawa.

N.F.C.U.S. Interregional Study Exchange Plan

Since 1952, Carleton University has participated in the Interregional Study Exchange Plan sponsored by the National Federation of Canadian University Students.

Each year, six students from universities other than English-language institutions of Ontario and Quebec may be granted free tuition at Carleton for the studies of their penultimate year. Two Carleton students may be chosen from among those who apply for permission to study, tuition free, at French-language universities in Quebec, or universities of the west coast, the prairies or the Maritimes.

Carleton students wishing to apply for participation in the plan should consult the Registrar before January 31. Selection will be made by a committee composed of the Dean of the Faculty of Arts and Science, the Registrar, the President of the Students' Council, and the External Affairs Chairman of the Students' Council. All applications will be subject to the approval of the host university.

Jean MacOdrum Memorial Scholarship

Value \$50. Awarded annually, if merited, to a woman who is a full-time undergraduate proceeding to the final year of a degree course, who has a better than average academic record, and who has shown participation and leadership in extracurricular activities.

Each candidate is nominated by at least three students and selection is made by a committee of the Hleodor Society composed of a first-year student, a second-year student, a final-year student, at least one member of the executive of the Hleodor Society, the Registrar, and a member of Faculty. Nominations must be forwarded to the Registrar not later than February 15.

Established 1953, in memory of Mrs. M. M. MacOdrum, by the Hleodor Society of Carleton University.

J. P. Bickell Foundation Scholarships

The Trustees of the J. P. Bickell Foundation have established in the Department of Geology, Faculty of Arts and Science, scholarships for students entering the Geological profession, of a possible value of \$1,200 each. The Scholarships may be awarded on entrance into the Honours Geological sequence at the second, third, or fourth year levels at Carleton University. The scholarships are payable over two or three years depending on the entrance level.

Application must be made to the Chairman of the Department of Geology by May 15. In order to be eligible, the applicant must undertake to register in the Honours Geology sequence with a minor in Biology, Chemistry, Mathematics, or Physics; or a combined Honours sequence of Geology and one of the above-mentioned subjects.

Full particulars and application forms may be obtained from the Registrar of the University.

SCHOLARSHIPS SPECIFICALLY IN ENGINEERING:

Regent Vending Machines Limited, Scholarship

Value \$100. Awarded annually to an outstanding student in Engineering proceeding from the first to the second year in the Engineering curriculum. Donor: Regent Vending Machines, Limited. Established 1954.

Spartan Air Services Limited, Scholarship

Value \$500. To be awarded to a deserving high ranking student in First Year Engineering. The Scholarship will be payable in two equal instalments, one at the conclusion of the successful candidate's first year of Engineering; the other at the conclusion of his second successful year.

Donor: Spartan Air Services Limited, Ottawa. Established 1956.

Government of Ontario Scholarships

The Government of Ontario has, for the academic year 1959-60, greatly expanded its student-aid program by appropriating the sum of \$1,200,000 to that end and by authorizing the use of a portion of that sum for the award of a number of Ontario Scholarships to students who show outstanding ability as evidenced by their results on the annual Grade 13 Departmental examinations.

Ontario Scholarships of the value of \$400 may be awarded to applicants who obtain an average of not less than 80 per cent on eight papers of the Grade 13 Departmental examinations (including both papers in English), all written in the year of application, and who enrol in an eligible institution in September, 1959. Scholarship announcement and application forms have been sent to the schools.

**II. POST-GRADUATE SCHOLARSHIPS TENABLE AT CARLETON UNIVERSITY:
FELLOWSHIPS, SCHOLARSHIPS, LOANS AND BURSARIES IN PUBLIC ADMINISTRATION**

The following awards are available for study in the academic year 1959-60.

1. For candidates for the Master of Arts Degree—two fellowships of \$1,500 each, and one of \$1,000.
2. For candidates for the Diploma in Public Administration—two scholarships of \$1,000 each and two of \$750 each.
3. For part-time study towards the Diploma or the M.A. in Public Administration—ten scholarships, each equivalent to the tuition fee for the current year.

Providing that there are fully qualified applicants presently employed in the Public Service of Canada, one or more of the fellowships and scholarships for full-time study will be rewarded to public servants. They could then apply to their departments for educational leave with partial pay.

Applications for awards for full-time study must be received by April 1, and for part-time study by May 1. Announcement of the awards will be made shortly thereafter. Application may also be made, up to August 31, for awards not granted or taken up in April or May. A full-time Fellow or Scholar may in addition apply, at any time, for a loan of up to \$1,500 or for a bursary. The required forms may be obtained from the Registrar.

III. POST-GRADUATE SCHOLARSHIPS TENABLE ELSEWHERE

Students are invited to watch the University bulletin board for notices of scholarships, and to consult the Registrar who has a number of publications outlining fellowships and scholarships available for study in the various universities in Canada and abroad.

PRIZES

B'nai B'rith Awards

Two of \$50 each, awarded annually to students with superior academic records, progressing from one course-year to another in Carleton University. Donor: B'nai B'rith, Ottawa Lodge No. 885. Established 1947.

Faculty Club Prize

Value \$25. Awarded by the Faculty Club of Carleton University to a student chosen by the President. Established 1946.

National Council of Jewish Women Award

Value \$100. Awarded on the recommendation of the Department of History to the student achieving the best standing in Canadian History. Donor: National Council of Jewish Women, Ottawa Section. Established 1950.

Lilian I. Found Prize for Poetry

Value \$25. Offered annually for the best lyric of fifty lines or less submitted by an undergraduate of Carleton University by March 15. Details may be obtained from the Registrar's office. Donor: Mrs. Lilian I. Found. Endowed 1950.

Chemical Institute of Canada Prize

Value \$25. Awarded as a book prize to the best student proceeding to the final year of the course leading to the degree of Bachelor of Science with honours in Chemistry. Donor: The Chemical Institute of Canada. Established 1950.

Engineering Institute of Canada Prizes

For proficiency in engineering studies, a prize of \$35 is awarded to a student completing second-year Engineering, and a book prize of the value of \$15 is awarded to a student completing first-year Engineering. Donor: Ottawa Branch, Engineering Institute of Canada. Established 1947.

D. F. McKechnie Prize in Accounting

The yield of a \$200 fund is used each year to purchase a book prize to be awarded, when merited, to a student in Commerce for proficiency in the study of accounting. Donor: D. F. McKechnie, C.P.A. Endowed 1951.

Prize of the Junioresettes of the National Council of Jewish Women, Ottawa Section

Value \$50. Awarded annually, if merited, on the recommendation of the Department of Psychology, to a third-year woman student majoring in Psychology, who is judged to be the most promising in this field. Donor: The Junioresettes of National Council of Jewish Women. Established 1956.

American Society for Metals Prize in Engineering

Value \$25. Awarded annually to a student with high standing in the first year of the Engineering course. Donor: Ottawa Valley Chapter, American Society for Metals. Established 1951.

Henry Birks and Sons (Ontario) Limited, Award

Value \$25. Awarded annually to a Carleton University student with a superior academic record who has contributed substantially to extra-curricular activities. Donor: Henry Birks and Sons (Ontario) Ltd. Established 1951.

Wilgar Memorial Prize in English

The yield of a \$200 fund is used each year for a book prize to be awarded to a Carleton University undergraduate who has shown excellence in essay-writing. Established 1951, in memory of the late W. P. Wilgar, Assistant Professor of English at Carleton University, 1948-50. Endowed 1952.

Henry Marshall Tory Award

Presented annually to an outstanding graduating student who has shown a high degree of academic application, has indicated an interest in the University by broad participation in extracurricular activities of a constructive nature, has indicated qualities of leadership, and has attended Carleton University for at least three winter sessions.

Each candidate is nominated by at least five members of the Students' Association and selection is made by a committee composed of the President of the University, a member of the Board of Governors, the Registrar, a member of the Faculty Board, and three students chosen by the Students' Council.

The Winner's name is inscribed on the master trophy and he receives a miniature replica.

The award was established in 1950 by the Students' Council of Carleton University.

H. Carl Goldenberg Book Prize

Value \$10. Awarded annually as a book prize for excellence in Journalism subjects taken in the third year of the Bachelor of Journalism Course. Donor: H. Carl Goldenberg, O.B.E., Q.C., of Montreal. Established 1953.

Kenneth R. Wilson Memorial Award for Journalism Graduates

Value about \$200. Offered annually to a student graduating in Journalism who, in the opinion of a board of selection, shows exceptional promise as a future reporter and interpreter of Canadian affairs. Endowed 1953, in memory of Kenneth R. Wilson, Ottawa Editor of The Financial Post, by a group of his personal friends.

Catherine Daumery Memorial Prize for Botanical Collection

Value \$35, together with a book prize. Awarded annually, if merited, on the recommendation of the Department of Biology, to a student who has submitted, by November 1, an outstanding collection of mounted and identified flowering plants. Donor: Anonymous. Established 1953.

Elizabeth White Memorial Prize for Zoological Collection

Value \$35, together with a book prize. Awarded annually, if merited, on the recommendation of the Department of Biology, to a

student who has submitted, by November 1, an outstanding collection of insects or arachnids, properly preserved and identified. Donor: Anonymous. Established 1953.

Prize of the Ambassador of Switzerland to Canada

For excellence in the study of French, a book prize is offered annually by the Ambassador of Switzerland to Canada. Established 1953.

French Embassy Awards

French Embassy Book Prize, for excellence in the study of French, a book prize is presented by the French Embassy in Canada. Established 1953.

French Embassy Medal, awarded, if merited, to a graduating student for excellence in French. Established 1955.

Prize of the Embassy of the Federal Republic of Germany

For excellence in the study of German, a book prize is offered annually by the Embassy of the Federal Republic of Germany in Canada. Established 1957.

The Ottawa South Branch (W.C.T.U.) Prize in Sociology

Value \$50. To be awarded in 1958, if merited, to a student of Carleton University chosen by the Department of Sociology for excellence in the study of Sociology. Donor: The Ottawa South Branch of the Women's Christian Temperance Union.

Donald Lawrence Moulds Memorial Prize in English

Value \$50. Awarded annually, if merited, on the recommendation of the Department of English Language and Literature, to an outstanding student proceeding beyond the second year of the pass or honours course in English. Established 1954 by Ernest Moulds, in memory of his son who was killed in action while serving as a Spitfire pilot in the R.C.A.F. overseas in World War II, 1942.

Alan Larocque Prize in Mathematics

Value \$15. Awarded annually as a book prize to the highest ranking graduate in honours Mathematics. Donor: Alan Larocque, B.Sc., an honours graduate in Mathematics of Carleton University. Established 1956.

The Dr. M. Ralph Berke Prize in Chemistry

The yield of a \$500 fund is awarded each year, if merited, on the recommendation of the Department of Chemistry for a prize to be awarded to an outstanding student majoring in Chemistry proceeding from the third to the fourth year of the degree course.

Donor: Dr. M. Ralph Berke. Established 1956.

Engineering Students' Prizes:

Value \$100, to be awarded in 1959-60 as follows: one first prize of \$75 for the best Summer Essay; one second prize of \$25 for the Summer Essay.

Donor: American Society of Heating and Air Conditioning Engineers, Ottawa Valley Chapter. Established 1958.

The Ann Smith Freedman Memorial Prize

Value \$50. Awarded to the student in Psychology who has gained the highest standing in the experimental paper in Psychology 305 during the academic year. Donor: Mr. and Mrs. Jarvis Freedman. Established 1958.

MEDALS**The Governor-General's Medal**

Awarded annually, provided first class standing is obtained, to the student standing at the head of the graduating class. Donor: His Excellency the Governor-General of Canada. Established 1952.

University Medals

Awarded annually, when merited, to the graduating students standing highest in Arts, Science, Commerce, and Journalism. Established 1949.

Senate Medals

Awarded, when merited, to graduating students of outstanding academic achievement. Established 1952.

BURSARIES

Applications for Dominion-Provincial Student-Aid Bursaries, Type A, for Atkinson Charitable Foundation Entrance Bursaries, and for Rotary Club and Lions Club Awards (for students entering university from secondary school) should be made through secondary school principals. Applications for Dominion-Provincial Student-Aid Bursaries, Type B (for students progressing from one year to another in university) should be made through the Registrar of Carleton University after the commencement of fall classes.

Applications for all other bursaries listed below should be made to the Registrar not later than August 31.

University General Bursary Fund

A sum of \$1,500 is available in 1959-60 to provide bursaries in aid of students with satisfactory academic standing who, in the first or subsequent course-years, are in need of financial assistance. Established by the University in 1954.

Carleton Alumni Association Bursary Fund

The sum of approximately \$4,000 is provided for the year 1959-60 for bursaries in aid of students with satisfactory academic standing who, in the first or subsequent course-years, are in need of financial assistance. Provided by the Alumni Association of Carleton University, 1958.

Graduate Bursary Fund

The sum of \$1,000 is available in 1959-60 to provide bursaries for graduate students with appropriate academic standing who are in need of financial assistance. Established by the University, 1958.

Provincial and Dominion-Provincial Student-Aid Bursaries

Value up to \$500 each and tenable at the various colleges and universities of Canada, including Carleton University. They are awarded to "students of good character, whose health and physical fitness are satisfactory, who meet the required academic standing, and who, without financial assistance, could not continue their formal education."

Candidates must be residents of Ontario and have obtained at least second-class standing in the examinations of the year prior to that for which the bursary would be used. Increased funds have been made available in 1959.

Rotary Club of Ottawa Awards

Value up to \$400 each, awarded annually, on the basis of scholarship and financial need, to students from Ottawa schools entering a college or university. One or more of these may be held at Carleton University.

Lions Club of Ottawa Awards

Value up to \$400 each. Awarded annually to Ottawa students who, without financial assistance, could not continue their formal education. These may be held at Carleton University.

Ottawa Superfluity Shop Bursaries

An annual sum of approximately \$180 is available to provide bursaries for veterans of World War I or World War II, or for the descendants of such veterans, who are students in good standing at Carleton University and in need of financial assistance. Endowed 1947.

Ottawa Citizens' War Services Committee Bursary

An annual sum of approximately \$60 is available to assist veterans, their dependents or descendants, who are students in good standing at Carleton University and are in need of financial assistance. Endowed 1948.

Gyro Club Bursaries

Two bursaries of \$250 each. Awarded annually to male students of promise who have completed at least one academic year at Carleton University, who have specific professional or vocational goals, and who, without financial assistance, could not continue their formal education. Donor: Gyro Club of Ottawa. Established 1949.

Quota Club Bursary Fund

The sum of \$200 is available for the year 1959-60 to aid women students in good standing who are in need of financial assistance. Donor: Quota Club of Ottawa. Established 1950.

J. P. Bickell Foundation Bursary Fund

Value to be announced. The Trustees of the J. P. Bickell Foundation have established bursaries in the Faculty of Arts and Sciences. An applicant must be taking a normal sequence of courses leading to a degree in Geology and must have competent academic standing. Carleton students may obtain full details of the Bursary from the Student Personnel Officer (Office of Registrar). Donor: J. P. Bickell Foundation, Toronto. Established 1956.

Loyal Order of Moose Bursary

Value \$200. To be awarded to an entering student of good academic standing and in need of financial assistance. Donor: Ottawa Lodge No. 1765, Loyal Order of Moose. Established 1958.

Carleton University Faculty Club Bursary Fund

Provided annually by the Faculty to assist students of good academic standing who have completed one academic year in the University and who are in need of financial assistance. Established 1958.

Ottawa Business and Professional Women's Club Continuing Bursary

Value \$200. Awarded to a girl with competent standing in the Senior Matriculation examination, graduating from a collegiate institute or high school in Carleton County.

The bursary may be held until graduation, renewable annually, provided the student maintains satisfactory standing in her studies at Carleton.

Donor: Ottawa Business and Professional Women's Club. Established 1959.

Falkland Chapter (I.O.D.E.) Bursary

Value \$100. Awarded to a deserving student progressing from one year of course to another in Carleton University. Donor: Falkland Chapter, I.O.D.E. Established 1950.

Atkinson Charitable Foundation Bursary Fund

The sum of \$2,000 is available to assist students of Carleton University in the academic year 1959-60. Terms of award are as follows:

1. In addition to scholastic merit and financial need, goal and promise will be considered in selecting recipients.
2. Candidates must be residents of Ontario.
3. Applications may be for sums up to \$500.
4. An applicant must have completed at least one academic year and be enrolled as a full-time undergraduate in any course at Carleton University.
5. For one of the awards, preference will be given to candidates intending later to pursue studies in Theology.
6. Applications should be made on forms available from the Registrar's Office, not later than August, 31, 1959.

Donor: The Atkinson Charitable Foundation. Offered for the first time in 1951, as an experiment in the provision of financial aid to students.

Atkinson Charitable Foundation Entrance Bursaries

Value: \$400 for students living away from home, \$200 for students residing within commuting distance of the university. Candidates must be residents of Ontario and in need of financial assistance. They must obtain an average of at least 66% on eight Ontario Grade XIII examination papers, be qualified for entry to the degree course of their choice, and be sponsored by their high school principals. Application should be made through the high school principal before May 1. Carleton University is one of the Ontario universities at which these bursaries may be held. Donor: The Atkinson Charitable Foundation, Toronto. Established 1953.

The Maurice Frederick Carty Bursary

Value \$300. To be awarded annually to a student in course who would not otherwise be able to proceed without delay to a higher year within the University. Donor: Mrs. E. G. Carty, in memory of her son, Maurice Frederick Carty. Established 1957.

Countess of Ashburnham Chapter (I.O.D.E.) Bursary

Value \$300. To be awarded annually to a student entering Carleton University, or already in course, who is in need of financial assistance to carry on full-time studies. Donor: The Countess of Ashburnham Chapter I.O.D.E. Established 1959.

Protestant Girls' Club of Canada Bursary

Value \$100. To be awarded annually to a Protestant girl or girls proceeding into the graduating year at Carleton University. Donor: The Protestant Girls' Club of Canada. Established 1955.

Arnhem Chapter (I.O.D.E.) Bursary

Value \$100. To be awarded in the academic year 1959-60 to a student with satisfactory academic standing who in the judgment of the President of Carleton University is in need and deserving of financial assistance. Donor: Arnhem Chapter I.O.D.E. Established 1955.

R. A. Beamish Bursary

Value: approximately \$250. Awarded annually to a student entering or progressing from one academic year to another who, without financial assistance, could not continue his or her formal education. To be eligible, an applicant must be a resident of one of the eleven eastern counties of Ontario (Renfrew, Frontenac, Lanark, Leeds, Carleton, Grenville, Russell, Dundas, Prescott, Glengarry, Stormont). Donor: The R. A. Beamish Foundation. Endowed 1951.

South Ottawa Kiwanis Club Bursaries

(1) Value \$250. Awarded annually to a student who has completed successfully at least one academic year in Carleton University and who, without financial assistance, could not continue college studies. Donor: Kiwanis Club of South Ottawa. Established 1951.

(2) Value \$250. Awarded annually to a student who has completed successfully at least one academic year in Carleton University and who, without financial assistance, could not continue college studies. Restricted to students from Ottawa and from areas outside the capital in Carleton and Russell Counties.

Donor: Kiwanis Club of South Ottawa. Established 1958.

South Ottawa Kiwanis Club (*Ladies Auxiliary*) Bursary

Value \$50. To be awarded in the academic year 1959-60 to a woman student who has completed one academic year at Carleton University, and who is in need of, and deserving of, assistance to continue studies as a full-time student. Donor: Kiwanis Club of South Ottawa (*Ladies Auxiliary*). Established 1956.

The South Ottawa Lions Club Bursaries

Two bursaries of value \$100 each, to be awarded annually to a student of good character, who exhibits proficiency and promise, and who has completed one academic year at the University, and who, without the benefit of financial assistance, would be unable to continue his or her chosen studies. Donor: South Ottawa Lions Club. Established 1957.

Poppy Welfare Fund Award

Value \$300. Awarded annually to students entering Carleton University who are the children of war veterans, and who are in need of financial assistance. Maximum award to each student will be \$100. Application forms are available at Poppy Fund Headquarters, Trafalgar House, or the Registrar's Office, Carleton University. Donor: The Ottawa Welfare Poppy Fund Committee. Established 1956.

National Memorial Chapter I.O.D.E. Entrance Bursary

Value \$100. To be awarded to a student entering Carleton University in 1959 who requires financial aid to begin the University course. Donor: National Memorial Chapter I.O.D.E.

Philemon Wright Chapter (I.O.D.E.) Bursary

Value \$75. Awarded annually to a student with satisfactory academic standing who is in need of financial assistance. Open only to residents of the Province of Quebec, with preference to those resident in the County of Hull and adjoining counties. Donor: Philemon Wright Chapter, I.O.D.E. Established 1952.

A.N.A.F. Veterans Capital Unit Bursaries

Two of \$150 each, awarded annually to students entering or progressing from one year of course to another in Carleton University, who have satisfactory academic standing and are in need of financial assistance. Preference will be given to (a) children of the deceased veterans, (b) the dependents of parents either of whom is a veteran and who are ordinarily resident in the Province of Ontario or the Province of Quebec. Donor: Army, Navy & Air Force Veterans in Canada, Capital Unit 236, Ottawa. Established 1953.

Children of War Dead (*Education Assistance*) Act

This act provides fees and monthly allowances for children of veterans whose deaths were attributable to military service. Enquiries should be directed to the nearest District Office of the Department of Veterans Affairs.

LOAN FUNDS

The university administers several loan funds which are available for short and long term loans to students in need of financial aid.

Loans made from funds held in trust by the University are in general limited to \$250 a year for any one student, with a maximum of \$600 total to one student. They are repayable after termination of undergraduate studies, and bear interest at the rate of 3% per annum beginning January 1 following the termination of studies. To be eligible for a loan from one of these funds, a student must have a satisfactory academic record and be able to show that he could not continue his studies without financial assistance.

General Loan Fund. Unrestricted. In addition to loans made on the general basis outlined above, one-month loans of up to \$10 may be made from this fund. Applications will be received by the Student Personnel Officer in the Registrar's Office. Founded by Kenneth Brewster. Other donors: Women of Rotary, Office Staff of Carleton College, F. J. G. Cunningham, Katherine J. Milliken, Mrs. J. S. MacLean, the late Mrs. Lila Wilson, and several anonymous donors. Established 1948.

John W. Parker Loan Fund. To assist students in need of, and deserving of, financial assistance, who appear willing and able to repay their loans. Undergraduates will normally be expected to have completed at least one year at Carleton University. Applicants must present a passing grade and show evidence in their academic record of likelihood of graduation. Under normal circumstances, the maximum loan to a student shall be \$500 a year, but loans up to \$1,500 a year to students with dependents may be made, if merited. Donor: The late Mrs. John W. Parker. Established 1955.

Provincial Student-Aid Loans

Value up to \$500 each and tenable at the various colleges and universities of Ontario, including Carleton University. They are awarded to students of good character, whose health is satisfactory, who meet the required academic standing, and who, without financial assistance, could not continue their formal education.

Candidates must be residents of Ontario and have obtained at least third-class standing in the examinations of the year prior to that for which the loan would be used.

Journalism Loan Fund. Reserved for students in the course leading to the degree of Bachelor of Journalism. Founded by The Canadian Women's Press Club, Ottawa Branch. Other donors: Rielle Thomson, Kenneth Wilson, Blair Fraser, Canadian Pulp and Paper Association, Bruce Hutchison, F. P. Galbraith, Serrell Hillman, T. W. L. MacDermot. Established 1948.

Commerce Loan Fund. Preference is given to students in the course leading to the degree of Bachelor of Commerce. Founded in 1949 by the class of Commerce '49. Other donors: Class of Commerce '50.

Lady Perley Chapter (I.O.D.E.) Loan Fund. Preference is given to veterans. Donor: Lady Perley Chapter, I.O.D.E. Established 1948.

Laurentian Chapter I.O.D.E. Small Loan Fund

The sum of \$200 has been made available to assist in providing small emergency short-term loans to students in need. Donor: Laurentian Chapter I.O.D.E. Established 1950; revised 1959.

Arrangements may be made, on occasion, for assistance from funds administered by other organizations, among which are:

Veterans' University Loan Fund. Administered for the Department of Veterans Affairs to aid student veterans who are in receipt of allowances but need assistance to meet emergency expenses.

Royal Canadian Naval Benevolent Fund. The purpose of the Fund is to relieve distress and promote the well-being of naval personnel and their dependents both while serving and after discharge, except:

- (a) Former permanent force personnel with less than one year's service unless they had service during World War II.
- (b) Members of the Royal Canadian Navy (Reserve) with less than three year's service unless they had service during World War II.

Army Benevolent Fund. This fund exists to provide financial assistance to Army veterans in need. A student veteran may be considered for such assistance, however, only when he has received the maximum assistance for which he is eligible from the Veterans' University Loan Fund or when the Army Benevolent Fund Committee agrees that it would not be in the best interests of the veteran's welfare to request him to undertake the responsibility of the repayment of a loan.

R.C.A.F. Benevolent Fund (*University Loan Fund*). This fund was planned to assist in the education of discharged members of the R.C.A.F., their children and children of deceased personnel. Sums up to a normal maximum of \$300 may be borrowed and are repayable out of the following summer's earnings or after graduation, as preferred.

Harry F. Bennett Educational Fund. Administered by the Engineering Institute of Canada, this fund is available to provide financial assistance to deserving students who have successfully completed their first year in engineering.

P.E.O. Sisterhood Educational Fund. On recommendation by a local chapter of P.E.O., loans may be made for educational purposes to women students who have completed successfully at least one academic year of university studies. Loans shall not exceed \$500 for one year of study or \$1,000 for two or more years. In the case of loans for graduate students or seniors completing a four-year course, the maximum amount may be available for one year of study.

Further information regarding the various sources of financial aid may be had from the Registrar.

GENERAL REGULATIONS

CLASSIFICATION OF STUDENTS

Students, whether in the day or the evening division, are classified as *undergraduates* or *graduate students* if they are properly matriculated for and proceeding to a degree, diploma or certificate; otherwise they are classified as *special students*. They are considered to be *full-time* students when enrolled for four or more subjects in an academic session, and *part-time* students when enrolled for fewer than four.

CREDIT FOR SENIOR MATRICULATION COURSES

An applicant who has completed Junior Matriculation at the required level may be admitted and given credit for such Senior Matriculation subjects *as are appropriate to the first year pattern for the degree*. He will be given an opportunity to make up his course deficiencies as part of his program in the University.

No more than five senior matriculation subjects taken in a secondary school may be counted toward a Carleton degree.

Except by permission of the Committee on Admission and Studies, to which students should make application through the Registrar, no student will be given credit for senior matriculation subjects passed in a secondary school system after he has been registered as an undergraduate in Carleton University. Such permission is granted only rarely, and then only if the prescribed subject is not made available by the University. (This regulation governs students admitted as undergraduates in and after 1954.)

SUBSTITUTION FOR PRESCRIBED SUBJECTS

A student whose mother tongue is not English, and who has not had secondary school preparation in one of the languages (other than English) taught in Carleton University may apply to the Committee on Admission and Studies for permission to substitute an approved course in the humanities for the prescribed course in a language other than English.

COURSE LOAD

Normal course load for a *full-time* student in the winter session is five full courses. Except in the second year of the B.Com. course (in which $5\frac{1}{2}$ courses are prescribed) and in honours courses, no more than five full courses may be taken for credit in the winter session, unless by permission of the Committee on Admission and Studies. Students in the third and fourth years who wish to transfer from one course to another, must obtain the approval of their major departments. All transfers must be made *within three weeks following the opening of classes*.

A student who has been in full-time attendance at Carleton in a

winter session may take a course in the following *summer session* only if it is required to make up a deficiency, is recommended by his major department in lieu of a subject in the following winter session, or is taken as an extra subject for no degree credit.

Normal course load for a *part-time* student who is employed full time is one or two full courses in each winter session and one full course in each summer session. No more than two full courses may be taken for credit in a winter session and no more than one in a summer session, unless by permission of the Committee on Admission and Studies. Special students are not allowed to take more than two courses per winter session, except with permission.

The Committee on Admission and Studies seldom will permit a student to take an extra course for credit unless in the previous academic session he has obtained better than average standing. With the consent of the instructor concerned, however, an undergraduate student (day or evening) enrolled for degree credit or a graduate student in the day or evening division may audit courses (i.e., attend without the privilege of writing examinations) concurrently with those being taken for credit, without the necessity of registering for or paying tuition for such audited courses. The provision does not apply to the Summer Session program, except as formally recommended by the major department.

ATTENDANCE

A student is expected to attend all lectures, discussion groups, seminars and laboratory periods of any course in which he is registered, whether such periods of work are formally scheduled by the University Registrar or informally announced by the instructor.

Each instructor will determine for his own courses the relation of class attendance to course grades, and whether attendance records shall be kept. Early in the session he will inform his students of his practice in this regard.

The Senate may, at any time, either during the term or after the close of the term, require any student to withdraw from the University if his conduct, attendance, work, or progress is deemed unsatisfactory.

STANDING

A student's standing in his year's work will be determined not only by the results of mid-year and final examinations, but also by the work of the whole term or session, including consideration of class tests, laboratory work, essays, attendance, progress and any other matters bearing on the candidate's worth as a student of the University

Standing in all courses in the University is graded by the letters A, B, C, D (all unconditional passing grades) or F (failure). For the purpose

of determining a student's average standing, a point value is assigned to each of these letter grades: A = 4, B = 3, C = 2, D = 1, F = 0.

To receive credit toward a degree a candidate must obtain at least a "D" grade in the work of each course. In order to receive second class standing in his year's work, a student must have obtained an average of at least 2.4 grade points. In order to receive first class standing in his year's work, he must have obtained an average of at least 3.4 grade points. Additional regulations regarding required standing are stated in the outlines of the various degree programs, pp. 56-83.

Additional symbols used to indicate standing are as follows:

Aeg.—*Aegrotat*: absent from final examination but standing granted on basis of year's work; (a student granted *aegrotat* may write a special examination for a grade in the course.)

Pass—Passed supplemental examination but not otherwise graded. (Grade-point value=1.)

Inc.—Term work incomplete; to be graded "F(ns)" if not completed before the day of Spring Convocation immediately following the final examinations in any given year.

Abs.—Absent from final examination. (At the discretion of the instructor, an *undergraduate* or *graduate student* who is absent from the final examination may be graded "F(ns)" if his term work has been quite unsatisfactory.)

F(ns)—Failure; no supplemental examination allowed.

Wdn.—Withdrawn in good standing.

Students who wish to withdraw from courses must apply in writing to the Registrar, or fill out the appropriate forms in his office.

A student may not withdraw *in good standing* from any course for which he is registered, after February 15 in the winter session or July 31 in the summer session, except by permission of the Committee on Admission and Studies. If the student should withdraw from a course without such permission, and fails to write the final examination, his record will show that he was absent from the examination and he shall not have the privilege of writing a supplemental examination in that subject.

A candidate must obtain complete standing in the first year before registering in the third year, and complete standing in the second year before registering in the fourth year of any course.

FAILURE AND REPETITION

A student taking five or more subjects who fails in more than two subjects will be considered to have failed his year. A student taking fewer than five subjects who fails in more than one subject will be considered to have failed his year. In neither case will the student be permitted to write further examinations in any of the subjects of that

year without repeating them, and will retain credit only in those subjects in which he obtained "C" or higher standing. (For regulations governing failure in Engineering, see page 82.)

A student who has failed his year at Carleton University or elsewhere may apply to the Committee on Admission and Studies for permission to repeat the year's work. If permission is granted, he will be placed on probation for that academic year and must pass all courses taken (at regular or at supplemental examinations if allowed) in order to be restored to good standing. A student on probation who fails a course (including its supplemental examination if allowed) will be considered to have failed his year, and will normally forfeit his undergraduate status. He will retain credit (as a special student) only in those courses in which he obtained "C" or higher standing. A student placed on probation in the evening division must pass five courses in succession in order to regain good standing. Students must in all cases meet the terms of probation assigned by the Committee on Admission and Studies.

An undergraduate who has, in any event, failed his year twice forfeits his undergraduate status.

EXAMINATIONS

Mid-year examinations are held in all first-year and second-year lecture courses and in others at the discretion of the instructor, and final examinations in all courses, at the times listed under the Academic Year, p. 3. With few exceptions, a single, joint final examination is set for day and evening classes in the same subject—usually during morning or afternoon hours. In full courses in which no formal mid-year examinations are held, mid-year grades will be given, when possible, on the basis of assignments, tests and other term work during the first term. *Students who fail to write the mid-year or final examination without good cause will be penalized. Such cause must be stated in writing to the Registrar, for consideration by the Committee on Admission and Studies, not later than one week after the date on which the examination was held if he is to write the final examination (in the case of a missed mid-term), or to receive credit in the course in which the final examination was missed, or permission to write a special final examination.*

In particular, a student who, because of illness, has failed to write the scheduled mid-year or final examination in any course may apply for *aegrotat* standing or for permission to write a special examination provided he presents to the Committee on Admission and Studies the appropriate (University) medical certificate, duly completed and signed by his attending physician or surgeon. Students actually under medical treatment from an attending physician or surgeon in the period immediately prior

to the examinations are reminded that it is their responsibility to notify the University that this situation exists if it is certain to affect their attendance at the examinations.

Course grades are released only by the Registrar. Year-end reports are mailed to students as soon as possible after the release of grades has been authorized. Upon the request of a student, a duplicate of his report will be sent to his employer or another designated person.

Special final examinations. A student who, for any reason, has not written a final examination on the appointed date may be required, or may apply for permission, to take a *special final* examination. Special final examinations, and arrangements for taking them, may be authorized only by the Committee on Admission and Studies. They are ordinarily written at the time of the supplemental examinations. For fee, see p. 27.

Supplemental examinations. All supplemental examinations in courses taught during the winter session are held in September, at the University, with the exception of supplemental examinations for January half-course finals — these supplementals are held in May. Summer course supplemental examinations are written in November. For exact dates, see The Academic Year, p. 3. Fees are shown on p. 27.

An undergraduate student who has been graded "F" on a final examination, but has not failed his year, may write a supplemental examination in that subject at the time of the next regular supplemental examinations. In such cases the supplemental examination ordinarily will be graded only "Pass" or "Failure".

A student who fails a course primarily because of unsatisfactory laboratory or term work may be graded "F(ns)", meaning that he may not write a supplemental examination in that course. The privilege of writing supplemental examinations will be thus denied only in special cases, and the student shall have the right of appeal to the Committee on Admission and Studies.

No supplementary examinations are given in courses beyond the first three courses of a major or minor subject for a degree with honours.

On compassionate or medical grounds, or to raise a grade in a course already passed, a student may apply to the Committee on Admission and Studies for permission to write a *special supplemental* examination. A special supplemental examination is the same as an *ordinary* supplemental examination except that it is graded on the scale A, B, C, D, F.

A student who applies for and is granted permission to rewrite a subject for higher standing, may do so, once only, at a regularly scheduled period, within one calendar year after passing that subject. (A student in the evening division must do so within two calendar years.) Students are advised that when they write special supplemental examina-

tions for the purpose of raising their standing, the final grade assigned in any subject will be based on the whole year's work, including the supplemental, and that the grade obtained in the supplemental may be the grade retained even when it is lower than the grade derived from the previous final examination.

If a supplemental examination is failed, the student will be required to repeat the course before coming up for examination in that course in any subsequent year.

PROFICIENCY IN ENGLISH

All first-year students in Arts, Journalism, Commerce and Science take English 120 (English Literature and Composition). If this course is not passed in the first year, it must be repeated until passed. Thereafter, in any year of course, a student may be required to receive additional tuition in the use of the English language as prescribed by the Department of English, to which he may be referred, at any time, by an instructor in any department.

The Department of English, on the basis of a report by an instructor in another department, will decide whether the student ought to be required to take either the special short course in composition begun each January or an entire year's work, in the following academic year, in English 111 (Remedial English). If English 111 is prescribed, it will be added to the student's requirements for the degree.

LIBRARY REGULATIONS

All persons taking courses in the University, and all graduates of the University resident in Ottawa, are entitled to use the library the year round.

Most books may be borrowed for three weeks and renewed if not requested by another reader. Some books are placed on "Reserve" and may not be renewed. If they are not returned when due, a fine of 25c. for the first hour or part of an hour, and 10c. for each hour or part of an hour thereafter, is charged. When books borrowed for three weeks are kept long overdue, they become subject to reserve book fines.

Reference books may not be taken from the library.

Library hours are listed on the final page.

Every entering undergraduate in the day division will be required to complete satisfactorily an exercise in the use of the library, including the card catalogue, bibliographical sources, and standard reference works.

ACADEMIC COSTUME

For the Bachelor's and Master's degrees, the academic dress of Carleton University is of the design specified in the intercollegiate code. The hood is of *simple* shape, made of black *stuff*, and lined in silver with two chevrons of equal width inserted, that near the border, red, and that near the peak of the cowl, black. The border of the hood denotes the degree awarded, according to the following colour combinations: Arts—white; Journalism—white with a cord of black superimposed upon the border, set in $\frac{1}{4}$ " from the lower edge; Science—golden yellow; Commerce—drab; Public Administration—drab with a cord of dark brown superimposed upon the border, set in $\frac{1}{4}$ " from the lower edge. The Bachelor's hood is approximately three feet in length, with a two-inch border; the Master's, three and a half feet, with a somewhat wider border, and open to expose more of the lining.

The gown of the honorary Doctor of Laws degree is of the type described as *full*, of ankle length, and of a royal blue colour with revers and sleeves of a contrasting shade of light blue. The hood, made of the same royal blue material as the gown, with a purple border, is of the full rounded shape with a tippet, and open to the base so that the entire lining, which is similar to that of the lower degrees, is fully visible.

DETAILS OF COURSES OFFERED

I: DIVISION OF HUMANITIES AND SOCIAL SCIENCES

ARTS

Admission Requirements

(a) *To the First Year* of courses leading to the Bachelor of Arts degree:

Junior Matriculation—the Ontario Secondary School Graduation Diploma in the General Course (Grade XII), or an equivalent certificate, with a general percentage of at least 60%, with required standings in the following subjects:

1. English.
2. Mathematics (Algebra and Geometry).
3. History.
4. A language other than English.
5. Science (Physics and Chemistry; or Agricultural Science, Parts I and II) or an additional language.
6. Any *one* of: Music, Art, Home Economics, Commercial Work, Geography, Shop Work, Agriculture, an additional language.

Mature Matriculation—A person over the age of twenty-two years who, though lacking the admission requirements specified above, can give evidence of the likelihood of success in university studies, may be admitted *on trial*. If he completes successfully the subjects of the first year, his matriculation will be confirmed and he will be given credit for the year. Persons interested should consult the Registrar.

(b) *To the Second Year* of courses leading to the Bachelor of Arts degree:

Senior Matriculation—(1) Junior Matriculation or Mature Matriculation as prescribed above, and, in addition, (2) completion of first year, or attainment of the Ontario Secondary School Honour Graduation Diploma (Grade XIII), or an equivalent certificate, with required standing in the following five subjects:

1. English Composition and Literature.
2. A language other than English.
3. Mathematics (2 or 3 of Algebra, Geometry, Trigonometry) or an additional language.
4. A science: Biology or Chemistry or Physics.
5. One other, preferably History. (A student who does not offer History, will be required to include History 220 in the second or a subsequent year and, in addition, to include another of the subjects listed under Item 3 of the second-year requirements.)

See also p. 49, *Credit for Senior Matriculation courses*.

(c) *To the Third or subsequent years* of courses leading to the Bachelor of Arts degree:

Applications for admission to the third or subsequent years will be evaluated on their merits, and advanced standing granted for studies undertaken elsewhere only when these are recognized as the equivalent of subjects offered in Carleton University.

Every student will be required to complete at least his last five courses in Carleton University.

Course Requirements

● *Bachelor of Arts*—(Offered in both day and evening divisions).

Length of course. Candidates for the Pass B.A. degree will take a total of twenty courses after Junior Matriculation, or fifteen after Senior Matriculation. See also *Course Load*, p. 49.

Course selection. The B.A. course is designed to provide opportunity for a liberal education, including specialization in one subject of study, called a *major*. The choice of a major will normally be made upon entry to the third year, in consultation with the department or departments concerned, in any subject listed below. A *combined major* in two related subjects may be taken, with the consent of the departments concerned.

For 1959-60 the subjects are as follows:

Classics (Latin, Greek), Economics, English, French, German, Geography, History, Mathematics, Philosophy, Political Science, Psychology, Russian, Religion, Sociology, Spanish. (In certain exceptional cases, and with consent of the Department of Biology, a major in Biology in the B.A. course may be taken.)

Courses will be selected from those listed under Details of Subjects, pp. 91 ff., as follows:

FIRST YEAR

1. English 120.
2. A language other than English (a course numbered between 100 and 199).
3. Two or three of Mathematics 110, 111, 112 or Mathematics 115 or one of French 110, German 115, Greek 115, Italian 115, Latin 110, Russian 115, Spanish 115.
4. A science: Biology 200 or Chemistry 110 or Physics 200.
5. History 110.

SECOND YEAR

Either one or two of the requirements specified below may be postponed until a later year, to permit substitution in the second year of an additional course or courses chosen from Groups 3 or 4, or Religion 210 or 220.

1. A course in English literature: English 210 or 200. (Students choosing English as a *major* will take English 200.)
2. An introduction to the problems of thought and conduct: Philosophy 210 or 220.
3. An introduction to the study of society: *one* of Economics 210, History 220, Political Science 210, Psychology 210, Sociology 210 or 220.
4. A language other than English: *one* of French, German, Greek, Italian, Latin, Russian, Spanish (a course numbered in the 200's. Note that except in French and Latin, this may require a pre-requisite course numbered 115, which will carry a credit.)
5. *Either*: Mathematics 200 or 211
or: A science course chosen from Biology 200, Chemistry 210, Geology 210, Earth Science 200, Physics 200.

THIRD AND FOURTH YEARS

A total of ten courses, five in each year: a minimum of four (five, if one is not taken in second year) in the student's major. The others are to be chosen with the approval of the department or departments in which the major is taken.

Note: Students admitted to the B.A. course in or after 1952 will be governed by the above prescription of course selection. Those who were admitted to the course prior to 1952 are encouraged to transfer to the new curriculum if transfer is feasible, but have the option of continuing to be governed by the regulations stated at the time of their matriculation to the course.

Summer Reading Requirements

Students taking the course program leading to the B.A. are expected to fulfil summer reading requirements as announced, and should inform themselves of the requirements specified by each major department. *The degree will not be conferred upon students failing to meet this obligation.*

Proficiency in English. See p. 54.

Standing. General regulations regarding standing are stated on p. 50ff. In addition, a candidate for the B.A. degree must obtain a grade of "C" or better in at least half of the courses taken in Carleton University for the degree, and be recommended for graduation by his major department. If after the regular examinations in any year a student is below that standard, he is advised to raise his grades in some subjects by writing special supplemental examinations.

A student clearly below the required minimum standard at the end of his penultimate year prior to graduation may be required to withdraw from his major field by his department.

Honours Requirements in Arts (See p. 84ff.)

COMMERCE

● *Bachelor of Commerce* (Offered in both day and evening divisions)

The course leading to the degree of Bachelor of Commerce is designed primarily to provide an education with some specialization in subjects which should be of greatest interest and value to those looking forward to a business career. Because the aims of students differ widely, and because specific training can be gained more effectively in business itself than in academic courses, the Commerce course contains no specialized training in the techniques of business management and administration.

The course is based upon the conviction that a person who has learned to think and to express himself clearly and coherently has received the best preparation for responsible citizenship and business leadership in the modern world. The objective of the Commerce course is, therefore, to provide the maximum opportunity for rigorous, critical, and imaginative thinking by the student under the guidance and direction of the members of the Faculty.

Admission Requirements

(a) *To the First Year* of the course leading to the Bachelor of Commerce degree:

Requirements are the same as those for admission to the first year of courses leading to the Bachelor of Arts degree (see p. 56).

(b) *To the Second Year* of the course leading to the Bachelor of Commerce degree:

Senior Matriculation—(1) Junior Matriculation or Mature Matriculation as prescribed above (on p. 56) and, in addition, (2) completion of first year, or attainment of the Ontario Secondary School Honor Graduation Diploma (Grade XIII) or an equivalent certificate with required standing in the following five subjects:

1. English Composition and Literature
2. A modern language other than English
3. Mathematics (Algebra, Geometry, and Trigonometry)
4. A science: Biology or Chemistry or Physics
5. One other, preferably History.

See also p. 48, *Credit for Senior Matriculation Subjects*.

(c) *To the Third and Fourth Years* of the course leading to the Bachelor of Commerce degree:

Applications for admission to the third or fourth years will be evaluated on their merits, and advanced standing granted for studies undertaken elsewhere only when these are recognized as the equivalent of subjects offered in Carleton University.

Every student will be required to complete at least his last five courses in Carleton University.

Course Requirements

Length of course. Candidates for the Bachelor of Commerce degree must take a total of $20\frac{1}{2}$ courses after Junior Matriculation or $15\frac{1}{2}$ after Senior Matriculation. See also *Course Load*, p. 49.

Course selection. Courses will be selected from those listed under Details of Subjects, pp. 91ff., as follows:

FIRST YEAR

1. English 120
2. French 110 or a course numbered between 100 and 199 in another modern language¹
3. Mathematics 110, 111 and 112 or Mathematics 115
4. A science: Biology 200 or Chemistry 110 or Physics 200
5. History 110

SECOND YEAR

1. English 210
or Philosophy 210 or 220. } Both must be taken
before graduation.
2. A further course in the modern language taken in first year
or a science: Biology, Chemistry, Geology, or Physics
3. Economics 210
4. Commercial Law 210 or Political Science 210 or a course in Mathematics.
5. Accounting 210
6. Mathematics 220 (half course)

THIRD YEAR

1. Economics 300
2. Economics 310
3. Economics 320
4. Accounting 310
5. Any other course approved by a member of the Committee on Commerce Studies.

¹ See also p. 49, *Substitution for Prescribed Subjects*.

FOURTH YEAR

Five courses chosen as follows:

1. Economics 315
2. Two courses in Economics, at least one of which is to be 340, 345, 355, 365, 375*
3. Any other two courses approved by a member of the Committee on Commerce Studies.

Commerce students wishing to discuss their programs of studies should consult the Chairman of the Committee on Commerce Studies, who is their faculty adviser.

Students who, after achieving the B.Com. degree, intend to proceed to professional accounting degrees—Chartered Accountant (C.A.), Certified Public Accountant (C.P.A.), Certified General Accountant (C.G.A.), or Registered Industrial and Cost Accountant (R.I.A.)—should consult the chairman of the Accounting Department before entering the final year of the Commerce course. Any other students who are interested in professional accounting careers are referred to the special circular covering the various accounting degree-granting bodies. These students also may wish to consult the chairman of the Accounting Department.

Proficiency in English. see p. 54.

Summer Reading Requirements.

Students taking the course program leading to the B.Com. are expected to fulfill summer requirements as announced. *The degree will not be conferred upon students failing to meet this obligation.*

Standing. General regulations regarding standing are stated on p. 50. In addition, a candidate for the B.Com degree must obtain a grade of "C" or better in at least half of the courses taken in Carleton University for the degree, and be recommended for graduation by the Committee on Commerce Studies. If after the regular examinations in any year a student is below that standard, he is advised to raise his grades in some subjects by writing special supplemental examinations.

A student clearly below the required minimum standard at the end of his penultimate year prior to graduation may be required to withdraw from his major field by his department.

*For the year 1959-60 only, students in their fourth year may select Economics 300 instead of one of the five courses mentioned.

JOURNALISM

DIRECTOR OF THE DEPARTMENT:

WILFRID EGGLESTON, M.B.E., B.A., F.A.G.S.

ADVISORY COUNCIL

T. J. Allard, Executive Vice-President, *Canadian Association of Broadcasters*.

Clyde Blackburn, Ottawa Chief of Bureau, *The Canadian Press*.

Grant Dexter, Editor Emeritus, *The Winnipeg Free Press*.

Guy de Merlis, French Editor, *The Labour Gazette*.

D'Arcy Finn, Executive Editor, *The Ottawa Citizen*.

Blair Fraser, Ottawa Editor, *Maclean's Magazine*.

Michael Hind-Smith, Producer, CBOT.

Norman M. MacLeod, Director, *United Press International (BUP)*

Dan C. McArthur, *Canadian Broadcasting Corporation*.

Robert McKeown, Staff writer, *Weekend Magazine*.

I. Norman Smith, Associate Editor, *The Ottawa Journal*.

A. Davidson Dunton, President of the University.

Wilfrid Eggleston, Director of the Department.

James A. Gibson, Dean, Faculty of Arts and Science.

J. A. B. McLeish, Registrar of the University.

- *Bachelor of Journalism* (First two years offered in both day and evening divisions; last two years offered in day division only)

The course in Journalism at Carleton University has been built on the conviction that what today's journalist needs most of all is a first-rate education, supplemented by thorough training in the basic skills of investigation and communication. The value of the journalism course arises largely from its intimate integration with the college studies in the liberal arts. The modern journalist is required to report and comment upon the whole range of social, political, economic and cultural activities of his time. Before he can even ask intelligent questions about such matters, he must be grounded in the humanities and the social sciences. Nor can he know too much about a wide range of other fields of enterprise and learning.

The reporter is the link or bridge between the world of activity and investigation, and the great masses of readers and listeners. To be effective he must, therefore, master some of the fundamental arts of seeing, digging, interviewing, reading, organizing, reporting, and editing. Adequately equipped, he can readily apply his talents to any field of journalistic activity. The good newspaperman is noted for his ability to lay hold of information, and to see the value of the facts and opinions he acquires.

The course in Journalism at Carleton University thus emphasizes liberal scholarship and basic skills, in the belief that there are few practical applications of a specialized nature which cannot be subsequently acquired in a few weeks of actual work. While an array of "shop" courses in practical vocational training might appear to give more immediately useful crafts to the prospective journalist, it is assumed that no amount of "shop" training will carry a "cub" far if he lacks a broad background of liberal education and the intelligence to grasp and report the complex phenomena of modern society.

The opportunities in the national capital for the training of newspapermen and women are exceptional. The members of the parliamentary press gallery and staffs of the Ottawa newspapers, the press attachés of diplomatic missions, top executives in the radio broadcasting field, the public relations officers of government departments, and headquarters personnel of national associations are among the resources from which Carleton University can draw for guest lecturers and teaching material. Ottawa is the repository and headquarters of information upon almost every conceivable national and international topic. It is rich in cultural life. It is not going too far to say that residence for two or three years in the national capital can of itself be an education to anyone who purposes to make writing his or her career.

Admission Requirements

(a) *To the First Year* of the course leading to the Bachelor of Journalism degree:

Requirements are the same as those for admission to the first year of courses leading to the Bachelor of Arts degree (see p. 56 Calendar).

(b) *To the Second Year* of the course leading to the Bachelor of Journalism degree:

Senior Matriculation—(1) Junior Matriculation or Mature Matriculation as prescribed above and in addition, (2) completion of first year, or attainment of the Ontario Secondary School Honour Graduation Diploma (Grade XIII) or an equivalent certificate with required standing in the following five subjects:

1. English Composition and Literature.
2. A language other than English.
3. Mathematics (2 or 3 of Algebra, Geometry, Trigonometry) or Latin.
4. A science: Biology or Chemistry or Physics.
5. One other, preferably History.

See also p. 49, *Credit for Senior Matriculation Subjects*.

(c) *To the Third and Fourth Years* of the course leading to the Bachelor of Journalism degree:

Undergraduates applying for admission to advanced standing with allowances on credits gained at their original college or university may be admitted to the third or fourth year, if their academic record is accepted as at least equivalent to the completion of second or third year Journalism in Carleton University. Normally, such applicants should offer standing in at least two of the following subjects in their previous work: Canadian History, Psychology, Economics, Political Science. Credit for courses previously taken will be arranged on application, subject to the stipulation that a minimum of a full year's work of at least the last five courses must be taken at Carleton University in order to qualify for the Bachelor of Journalism degree.

(d) *To the B.J. Course as a post-graduate year:*

The holder of a bachelor's or master's degree in Arts, Science, or Commerce may be permitted to enroll in the five Journalism subjects normally taught in the third and fourth years (Journalism 310, 320, 330, 340, 350), and thus qualify for the degree Bachelor of Journalism in one academic year. He may be required to take, in addition, certain of the courses in the liberal arts which are prescribed for undergraduates in Journalism, if the pattern of his previous studies is deficient in such background.

NOTE: Journalism students are urged to become reasonably proficient on the typewriter as soon as possible. All assignments in the courses Journalism 310, 320, 330, 340 and 350 (which are taken in the third and fourth years) will be done by typewriter.

Course Requirements

Length of Course. Candidates for the Bachelor of Journalism degree must take a total of twenty courses in four years if admitted by Junior Matriculation, or fifteen courses in three years if admitted by Senior Matriculation.

Course Selection. The course leading to the degree of Bachelor of Journalism will consist of subjects selected from those listed under Details of Subjects, as follows:

FIRST YEAR

1. English 120 (English Literature and Composition).
2. French 110 (Readings in Modern French).
or a course numbered between 100 and 199 in another language¹.
3. Mathematics 115
or Latin 110 (First-year Latin).
4. A science: Biology 200 or Chemistry 110 or Physics 200.
5. History 110 (Main Directions in Modern History).

SECOND YEAR

1. English 210 (English Authors from Chaucer to T. S. Eliot).
2. A further course in the language taken in first year.
3. History 230 (North America in the Colonial Period)².
4. Philosophy 210 or 220 (Introduction to Philosophy—which must be taken in third year if not in second)
or Psychology 210 (General Psychology).
5. Economics 210 (Principles of Economics)
or Political Science 210 (Introduction to Political Science)
or Sociology 210 or 220.
6. Journalism 210 (Preparatory Lectures for Second-year Journalism Students)—a non-credit course.

THIRD YEAR

1. Journalism 310 (Introduction to Journalism).
2. Journalism 320 (Fundamentals of Reporting).
3. History 330 (Canada from 1791)².
4. An approved option³ (Philosophy 210 or 220, if not already taken).
5. An approved option³.

FOURTH YEAR

1. Journalism 330 (Editing).
2. Journalism 340 (Interpretative Reporting).
3. Journalism 350 (Career Seminar in Journalism).
4. An approved option³.
5. An approved option³.

¹ See also p. 49, *Substitution for Prescribed Subjects*.

² A student who comes to the University from another country may be advised to take a different sequence in History.

³ The subjects which will be recommended to students for their choice of options will be drawn from the following: Political Science, Economics, Sociology, Philosophy, Canadian Geography, History, English, Social Psychology, French.

Proficiency in English. See p. 54.

Standing. General regulations regarding standing are stated on p. 50. In addition, a candidate for the B.J. degree must obtain a grade of "C" or better in at least half of the courses taken in Carleton University for the degree, *including* Journalism 330, 340 and 350, and be recommended for graduation by the Department of Journalism. If after the regular examinations in any year a student is below that standard, he is advised to raise his grades in some subjects by writing special supplemental examinations.

PUBLIC ADMINISTRATION

DIRECTOR OF THE SCHOOL: R. OLIVER MACFARLANE, M.A., Ph.D.

ADVISORY COUNCIL

- O. E. Ault, Director, International Economic and Technical Co-operation
Division, Dept. of Trade and Commerce
C. H. Bland, formerly Chairman, Civil Service Commission of Canada
R. B. Bryce, Clerk of the Privy Council, and Secretary to the Cabinet
G. F. Davidson, Deputy Minister of National Welfare
J. Y. Harcourt, Executive and Professional Development Officer, Civil
Service Commission
E. F. Sheffield, Research Officer, Canadian Universities Foundation
C. D. Wight, Consulting Engineer
-

- A. Davidson Dunton, President of the University
James A. Gibson, Dean, Faculty of Arts and Science
R. Oliver MacFarlane, Director of the School
Donald C. Rowat, Professor of Political Science
J. A. B. McLeish, Registrar of the University
Pauline Jewett, Associate Professor of Political Science

THE PROGRAM

The rapid growth in government services during the last half century has increased the responsibilities and complicated the problems of public employees. The realization has been growing, therefore, that public administrators, whether federal, provincial or municipal, can profit from a special type of education. Carleton University has been attempting to meet this need by offering programs of study as preparation for public administration.

Assisted by a \$200,000 grant from The Atkinson Charitable Foundation, the School of Public Administration was established September 1, 1953, to coordinate the various programs of study and to promote further development and research in the field. Four programs are now offered: the first leads to a Bachelor of Arts degree with Honours in Public Administration; the second to an undergraduate Certificate in Public Services Studies; the third to a graduate Diploma in Public Administration; and the fourth to the degree of Master of Arts in Public Administration.

The Honours B.A. program is planned on the assumption that the most suitable education for a person desiring to be a capable public administrator is broad and general in base, with specialization at a later stage. While it is designed to be of particular use to students contem-

plating careers in public employment, it also provides a sound general education for those considering the legal profession or business.

The Certificate and Diploma programs, on the other hand, will be most helpful to those who desire training in fields directly related to public administration. The Certificate course is designed to encourage public servants without university training to broaden their background. Since they are allowed degree credit for this work, they will also be encouraged, upon its completion, to continue toward a bachelor's degree. The graduate Diploma course, requiring more advanced studies, is available both to public servants in the evening division and to full-time day students. The M.A. program is offered to full time students, but may be taken by part time students, subject to conditions set forth on page 73. Several fellowships and scholarships are available for M.A. candidates, and for both full- and part-time candidates enrolling for the graduate Diploma, and for full-time study toward the Certificate.

Public employees not interested in registering for studies leading to a degree, a certificate, or a diploma should note that they may take, as *special* students, any of the subjects listed in Public Administration programs for which they have the requisite background. Their attention is directed also to non-credit extension courses related to Public Administration which are offered from time to time by the University. Details may be obtained from the Registrar.

As Carleton University is located in the capital city and enjoys close relations with many government agencies, students of public administration may profit greatly from the unique advantages thus offered. Such institutions as the Library of Parliament, the Public Archives, the Dominion Bureau of Statistics, and the specialized libraries of the several government departments, all offer unusual opportunities for study in Ottawa. Advice and assistance are obtained from the Civil Service Commission and from officials of other government departments and agencies. Experienced public administrators give lectures or lead seminar discussions from time to time.

UNDERGRADUATE COURSES

- *Bachelor of Arts with Honours in Public Administration* (First two years offered in both day and evening divisions; last three years offered in day division only.)

Course Requirements

Candidates for the degree of Bachelor of Arts with Honours in Public Administration must satisfy all requirements for the degree of B.A. with Honours.

Course selection. The work of this course involves prescribed studies in Political Science, History, Economics and Public Law, and in approved options, as follows:

SECOND YEAR

Students intending to enter Honours Public Administration in the third year will take the Honours second year in the Social Sciences (see page 84), or they may enter from the Pass Course if at least second class standing has been obtained. They are advised, however, to include Political Science 210 (Introduction to Political Science) in the second year, and by the end of that year should have a reading knowledge of French.

THIRD YEAR

1. Political Science 310 (Comparative Government), 315 or 335
2. Economics 210 (Principles) or, if already taken, an option
3. History 330 (Canada from 1791)
4. Political Science 360 (History of Political Thought)
5. An approved option

FOURTH YEAR

1. Political Science 340 (Introduction to Public Administration)
2. Political Science 320 (Canadian Federalism)
3. Public Law 310 (Elements) or Political Science 380
4. Economics 310 (Money and Banking)
or Economics 315 (Economic History)
or Economics 360 (Economic Development of Canada)
or Economics 320 (Statistics)
5. An approved option

FIFTH YEAR

1. Political Science 365 (Modern Political Thought)
2. Political Science 325 (Government of Canada—Problems)
3. Political Science 390 (Research Tutorial)
4. Economics 350 (Economic Policy of Canada)
or Psychology 340 (Personnel Psychology I)
or Psychology 345 (Personnel Psychology II)
or Sociology 366 (Sociology of Work)
or Sociology 368 (Sociology of Political Power)
5. An approved option

- *Certificate in Public Service Studies* (Offered in both day and evening divisions.)

This course is designed primarily for public employees who seek special training in public service subjects at the undergraduate level. Subjects taken for the Certificate may be credited toward a bachelor's degree, but a student must complete at least five of the subjects required for the degree *after* the award of the Certificate. Candidates for the Certificate, full-time, are invited to inquire about possible financial aid.

Admission Requirements

Junior matriculation (see p. 56); but the cases of experienced applicants without junior matriculation will be considered on their merits and the completion of certain subjects at Carleton may be required before admission. Candidates may be admitted with advanced standing, but must complete at least five courses for the Certificate in Carleton University.

Course Requirements

The following courses are required and the following order is suggested.

1. Political Science 210 (Introduction to Political Science)
2. Economics 210 (Principles of Economics)
3. History 330 (Canada from 1791)
or History 360 (The Economic Development of Canada)
4. Political Science 340 (Introduction to Public Administration)
5. Political Science 320 (Canadian Federalism)
or Public Law 310 (Elements of Public Law)
6. One other, chosen in consultation with the Director according to the needs of the student.

Standing. A candidate for the Certificate must obtain a grade of "C" or better in at least half of the courses taken in Carleton University for the Certificate.

DISCONTINUED PROGRAMS:

Bachelor of Public Administration

Bachelor of Arts with Certificate in Public Administration

GRADUATE COURSES

- *Graduate Diploma in Public Administration* (Offered in both day and evening divisions)

This course is designed for those in or planning to enter the public service who already have a university degree, but desire further training in the fields directly related to public administration.

Admission Requirements

A. A bachelor's degree from a recognized college or university, including (with better than average standing) the following undergraduate courses, or their equivalents:

- a. Political Science 210 (Introduction to Political Science)
- b. Economics 210 (Principles of Economics)
- c. History 330 or 360 (Canadian History)
- d. Two other courses approved by the Director, in the social sciences or related fields. Experience in public service may be accepted in lieu of *one* of these two courses.

An applicant who lacks one or more of these prerequisite courses may be allowed to take one as No. 5 of the course requirements, and may make up the remainder of his deficiencies at the University. Ordinarily he would not be required to take more than two courses in addition to the requirements for the Diploma. A prospective full-time student with only one or two prerequisites to make up may take one of these during the summer prior to entry and/or may be permitted to take one as an additional course during his full-time year;

or

B. A bachelor's degree in any honours course requiring four years from senior matriculation, or a bachelor's degree and an additional year of post-graduate work with better than average standing. Students who have not obtained standing in Political Science 210, Economics 210, and History 330 or 360, or their equivalents, may be required to take one of these in addition to the requirements for the Diploma.

Course Requirements

Five courses are required:

1. Political Science 340 (Introduction to Public Administration)
2. Political Science 360 or 365 (Political Thought)

3. Political Science 325 (Government of Canada—Problems)
or Political Science 550 (Provincial and Municipal Government)
4. Political Science 320 (Canadian Federalism)
or Public Law 310 (Elements)
or Public Law 510 (Administrative)
or Economics 345 (Public Finance)
or Economics 350 (Economic Policy of Canada)
5. An approved social science, preferably chosen from: Economics 320, 345, 350, Public Law 310, 510, Sociology 364, 366, 368, Psychology 340, 345, or the courses in Political Science.

All five courses for the Diploma must be taken at the University. If a student has already taken any of these courses (or their equivalents) in qualifying for admission to the Diploma program, he must substitute others approved by the Director. To meet the needs of foreign students, variations from the course requirements may be approved by the Director.

Standing. Candidates for the Diploma must obtain an average of at least second class standing in the courses counted for the Diploma, with no grade below "C".

● *Master of Arts in Public Administration*

This program is normally offered in Day Division only, but it may be taken in Evening Division with the approval of the Director under the following conditions:

1. Admission under a or b (below).
2. Passing a comprehensive examination prior to the conferring of a degree.
3. Completing all requirements in a period not exceeding five years.
4. Having previously completed in B.A. or graduate program at least one year of university residence.

Admission Requirements

- a. A bachelor's degree, *and* the graduate Diploma in Public Administration with "B" or better grades in at least four courses;
or
- b. A bachelor's degree in any honours course requiring four years from Senior Matriculation with second-class honours or better, or a bachelor's degree and an additional year of post-graduate work with at least second class standing. If standing has not been

obtained in Introduction to Political Science, Economic Principles, Canadian History, Public Administration, and Political Theory, a student may be required to complete some or all of these courses with "B" or better grades, prior to undertaking the course requirements listed below. A prospective full-time student with only one or two prerequisite courses to make up, may take one of these during the summer prior to entry and/or may be permitted to audit or take one as an additional course during his full-time year.

If a student is without standing in all or most of these courses he will be required to register for the Graduate Diploma (see Diploma Admission Requirements, B.). An evening student may then, upon successful completion of three of the above courses with "B" or better grades, apply for admission to the M.A. program. (A full-time student in this category would be allowed to choose his Diploma courses so that one or two of them could count toward his M.A. Upon the successful completion of his full-time year, he could then either take the Diploma or apply for admission with advanced standing to the M.A. program, which could then be completed in the Evening Division.)

Course Requirements

1. Political Science 540 (Theory and Practice of Administration)
2. Public Law 510 (Administrative). (This course must be elected if not previously taken.)
or Economics 350 (Economic Policy of Canada)
3. Political Science 325 (Government of Canada—Problems)
or Political Science 550 (Provincial and Municipal Government)
4. Political Science 590 (Directed Study in a Selected Field)
5. and An approved social science } or a Thesis

Standing. A grade of "B" or better must be obtained in each course counted for the M.A. degree.

SCIENCE

Admission Requirements

(a) *To the First Year* of courses leading to the Bachelor of Science degree:

Requirements are the same as those for admission to the first year of courses leading to the Bachelor of Arts degree (see p. 56).

(b) *To the Second Year* of courses leading to the Bachelor of Science degree:

Senior Matriculation—(1) Junior Matriculation or Mature Matriculation as prescribed above (on p. 53) and, in addition, (2) completion of first year, or attainment of the Ontario Secondary School Honour Graduation Diploma (Grade XIII) or an equivalent certificate with required standing in the following five subjects:

1. English Composition and Literature
2. A language other than English
3. Mathematics (Algebra, Geometry and Trigonometry)
4. } Two of: Physics, Chemistry, Biology
5. }

See also p. 49, *Credit for Senior Matriculation Subjects*.

(c) *To the Third or subsequent years* of courses leading to the Bachelor of Science degree:

Applications for admission to the third or subsequent years will be evaluated on their merits and advanced standing granted for studies undertaken elsewhere only when these are recognized as the equivalent of subjects offered in Carleton University.

Every student will be required to complete at least his last five courses in Carleton University.

Course Requirements

- *Bachelor of Science* (Offered in both day and evening divisions)

Length of course. Candidates for the B.Sc. degree will take a total of twenty courses after Junior Matriculation, or fifteen after Senior Matriculation. See also *Course Load*, p. 49.

Course selection. The B.Sc. course affords opportunity to specialize in one science subject, called a *major*, and to a lesser extent in a second subject, called a *minor*. The choice of a major normally will be made upon entry to the third year, in consultation with the department concerned.

Standards of entry to a Major Subject. Students planning to *major* in a Science subject should, in the opinion of the Science Committee, normally enter the University with not less than second class standing in the Mathematics and Science subjects taken in the Ontario Senior Matriculation, or its equivalent.

Available Evening Courses. In several departments, some of the more advanced courses will normally be given, in whole or in part, in the day division only. Evening division candidates may therefore have to arrange to take one or two of their major courses in the daytime. Candidates are advised to consult their major departments as early as possible to arrange their programs.

For 1959-60, subjects in which majors may be taken are: Biology (Botany, Zoology), Chemistry, Mathematics, Geology, Physics.

Courses will be selected from those listed under Details of Subjects, pp. 91 ff., as follows:

FIRST YEAR

1. English 120
2. A language other than English (a course numbered between 100 and 199)¹
3. Mathematics 110, 111 and 112
4. {
5. { Two of: Biology 200, Chemistry 110, Physics 200

SECOND YEAR

1. One of: Classical Civilization 270 or 280, English 210, Philosophy 210 or 220
2. Mathematics 211 (or 200 with permission of major department).
3. { Three of:
4. { (a) Biology 200 or Botany 210 or Zoology 205
5. { (b) Chemistry 110 or 210
- (c) Geology 210
- (d) Physics 200 or 205

THIRD AND FOURTH YEARS

A total of ten courses, five in each year: normally at least four more courses in the student's major, at least two in a minor field, and at least one course each year chosen from subjects other than the natural sciences and mathematics. The program of each student in the third and fourth years is under the direct supervision of a full-time member of the department in which he takes his major.

Language requirement. Before graduation, the candidate for the

¹ See also p. 49, *Substitution for Prescribed Subjects*.

B.Sc. degree will be required to show that he has a reading knowledge of French or German (preferably both).

Note: Students admitted to the B.Sc. course in or after 1952 will be governed by the above prescription of course selection. Those who entered the course prior to 1952 are encouraged to transfer to the new curriculum if transfer is feasible, but have the option of continuing to be governed by the regulations stated at the time of their matriculation to the course.

Proficiency in English. See p. 54.

Standing. General regulations regarding standing are stated on p. 50. In addition, a candidate for the B.Sc. degree must obtain a grade of "C" or better in at least half of the courses taken in Carleton University for the degree, and be recommended for graduation by his major department. If after the regular examinations in any year a student is below that standard, he is advised to raise his grades in some subjects by writing special supplemental examinations.

A student clearly below the required minimum standard at the end of his penultimate year prior to graduation may be required to withdraw from his major field by his department.

Honours Requirements in Science. (See p. 84ff., and departmental announcements, pp. 91ff.)

SCHOOL OF ENGINEERING

DIRECTOR OF THE SCHOOL: John Ruptash, B.Sc., M.A.Sc., Ph.D.

ADVISORY COUNCIL

- B. G. Ballard, Vice-President (Scientific) and Director of Division of Radio and Electrical Engineering, National Research Council, Ottawa
- L. F. Grant, Field Secretary, Engineering Institute of Canada, Toronto
- D. C. MacPhail, Director of Division of Mechanical Engineering, National Research Council, Ottawa
- J. H. Parkin, formerly Director, now Senior Consultant to Division of Mechanical Engineering, National Research Council, Ottawa
- K. F. Tupper, Ewbank and Partners, Engineering Consultants, Toronto
- G. R. Turner, formerly Chairman of Ottawa Branch, Engineering Institute of Canada
-

- A. Davidson Dunton, President of the University
- C. J. Mackenzie, President of the Atomic Energy Control Board, Chancellor of the University
- M. S. Macphail, Associate Dean, Faculty of Arts and Science
- E. W. R. Steacie, President of the National Research Council, Ottawa
- John Ruptash, Director of the School

● *Bachelor of Engineering* (offered in the Day Division only)

A four-year curriculum in Engineering is offered to students wishing a career in design, research, or production. The program specializes in the subjects fundamental to mechanical, electrical, and civil engineering. In addition, study is required in a sequence of courses in the humanities.

The curriculum has been established to suit the present conditions in our country. One of these is the trend to more design and project engineering being done by Canadian engineers for native enterprises. This is creating a demand for more highly qualified engineers.

Another condition is the tendency for former engineering methods to become obsolete in the face of the rapid increase in engineering knowledge. This means that while at university a student should be concentrating on the fundamentals of his subject. Current practice is best learned on the job.

A third condition is discernible in the world today. The engineer is assuming, or is being forced to assume, a more important role in

society. As a member of a large, nation-wide professional group, he can now influence public affairs. Consequently, it is important that he be tutored in the humanistic aspects of our society.

Furthermore, either as a technologist or a manager, he is in touch with all the major segments of the industrial complex: labour, finance, government, as well as the laboratories. Thus with his training and experience the engineer must expect to be asked to supply the community with advice on technical-social matters.

The entire undergraduate program is designed to provide the graduate with both a method of building up sound judgment and the basic engineering tools required for professional practice. The first three years of study are principally devoted to mathematics, science and engineering science subjects. During the third year, the first of a sequence of three courses in humanities is taken. The following two are then taken in the fourth year.

In the fourth year, besides a course in Professional Practice, the student learns the nature of engineering problems in Engineering Design. He may choose in which field he would prefer to do this design work. Also, he has the privilege of studying further in a particular field that interests him by selecting his Technical Elective course. Dependence on the lecture system of instruction is decreased in the later years with greater use being made among the smaller groups of the project or tutorial method. On graduation, the student is then ready for true specialization either on the job or in the graduate school.

Admission Requirements

(a) To the First Year of the course leading to the Degree in Engineering:

Junior Matriculation—Junior matriculation requirements are the same as those for admission to the first year of courses leading to the Bachelor of Arts degree (see p. 56).

Senior Matriculation—In addition, a candidate for admission to the first year of the course leading to the Degree in Engineering must have passed the examinations of the first year of the Bachelor of Science course in Carleton University (see p. 75), or of Ontario Grade XIII or the equivalent examinations of other recognized examining bodies in the following subjects:

1. English Composition and Literature
2. Mathematics (Algebra, Geometry, including Analytic Geometry, and Trigonometry)
3. Physics

4. Chemistry
5. One of: Latin, Greek, French, German, Spanish, Italian, History, Biology (Botany and Zoology)

First or Second Class standing in Mathematics, Physics, and Chemistry is required.

(b) To the Second Year of the course leading to the Degree in Engineering:

Students who have successfully completed the work of first year Engineering in Carleton University, or equivalent work elsewhere, may apply for admission to the second year.

Course Requirements

Length of Course. Candidates for the Degree in Engineering will take a course covering four years of study after Senior Matriculation or after the first year of the B.Sc. course.

Course selection. Courses will be selected from those listed under Details of Subjects, pp. 91 ff., as follows:

FIRST YEAR

SUBJECT	Lecture Hours Per Week		Laboratory Hours Per Week	
	First Term	Second Term	First Term	Second Term
Chemistry 210 (Qualitative Analysis and Elementary Physical Chemistry).....	3	3	3	3
English 230 (English for Engineering students).....	2	2	—	—
Mathematics 211 (Calculus).....	3	3	1	1
Mathematics 247 (Geometry, Spherical Trigonometry and Algebra).....	2	2	—	—
Physics 205 (General Physics).....	3	3	3	3
Engineering 211 (Mechanics I).....	3	3	—	3
Engineering 221 (Engineering Drawing).....	1	1	5	5
Engineering 231 (Surveying).....	1	1	—	—
Engineering 235 (Surveying Fieldwork)	Four Weeks April - May			
	18	18	12	15

SECOND YEAR

SUBJECT	Lecture Hours Per Week		Laboratory Hours Per Week	
	First Term	Second Term	First Term	Second Term
Geology 210 (General Geology).....	2	2	2	2
Mathematics 310 (Calculus and Differential Equations).....	3	3	—	—
Physics 305 (Electricity).....	3	3	3	3
Engineering 311 (Mechanics II).....	2	2	—	5
Engineering 355 (Engineering Analysis).....	2	2	—	—
Engineering 361 (Mechanics of Materials I).....	2	2	5	3
Engineering 371 (Summer Essay I).....	—	—	—	—
Engineering 381 (Thermodynamics I).....	3	3	3	—
	17	17	13	13

THIRD YEAR (First offered 1959-60)

SUBJECT	Lecture Hours Per Week		Laboratory Hours Per Week	
	First Term	Second Term	First Term	Second Term
Mathematics 328 (Applied Mathematics)....	1	1	1	1
Engineering 410 (Electrical Engineering)...	4	4	3	3
Engineering 420 (Mechanics of Machines).....	2	2	—	3
Engineering 430 (Mechanics of Materials II).....	2	2	3	3
Engineering 440 (Mechanics of Materials III).....	2	2	—	—
Engineering 450 (Thermodynamics II).....	2	2	3	3
Engineering 472 (Summer Essay II).....	—	—	—	—
Humanities I.....	2	2	1	1
	15	15	11	14

The details of the Fourth Year are subject to modification as the program is developed.

FOURTH YEAR (First offered 1960-61)

SUBJECT	Lecture Hours Per Week		Laboratory Hours Per Week	
	First Term	Second Term	First Term	Second Term
Engineering 460 (Engineering Design).....	3	3	15	15
Engineering 473 (Summer Essay III).....	—	—	—	—
Engineering 480 (Professional Practice).....	2	2	—	—
Technical Elective.....	2	2	—	—
Humanities II.	2	2	1	1
Humanities III.....	2	2	1	1
	11	11	17	17

The Technical Elective and the Humanities in the third and fourth years are chosen as follows:

Technical Elective. One of the following to be elected from those offered:

- a) An additional course in mathematics;
- b) An additional course in physics;
- c) An additional course in chemistry;
- d) An engineering graduate course.

Humanities I. A first course in one of the Humanities or Social Sciences, of a sequence of three to be elected from those offered to engineering students.

Humanities II. A second course in the subject started in Humanities I.

Humanities III. A third course in the subject started in Humanities I, or a first course in an associated subject.

Standing. General regulations regarding standing are stated on p. 50.

Regulations regarding Failure in Engineering. An Engineering student who fails a number of subjects may be deemed to have failed his year, and denied the privilege of writing supplemental examinations. He may apply to the Committee on Admission and Studies for permission to repeat the year, on probation.

An Engineering student who fails some subjects and is permitted to write supplemental examinations may not enter the following year if, after the supplemental examinations, he is still conditioned in more than one full course, or if he is conditioned in any course which is prerequisite to one of the courses in the following year.

If a student fails both the regular and supplemental examinations in a subject, he must repeat that or an equivalent course before taking another examination in it.

Employment. Students in Engineering are required to have at least six months of suitable experience in technical work before receiving their degree. Evidence of employment for the summer of 1959 must be submitted in forms, obtainable at the Registrar's Office, not later than October 31, 1959.

Summer Essays. All students in Engineering must submit Summer Essays I, II and III on entering the second, third and fourth years, respectively. They are normally written on a topic drawn from the experience of the student during his summer work, and must be prepared in a form prescribed by the School of Engineering.

HONOURS COURSES

General Regulations

These courses are characterized by strict prescription of studies and high standards of performance, particularly within those departments in which major and minor subjects have been selected. The whole course of any candidate for an Honours degree must be discussed with and approved at every stage by the Chairman of the department in which the candidate chooses his major subject or field of study.

Additional Admission Requirements

Admission to Honours will be granted only with the consent of the department in which the major subject is taken. Normally students who have attained second class standing in the work of the second year of the Pass course may be admitted to the third year of an Honours course.

Students with a high second class average on Senior matriculation or a 2.8 standing in the Carleton first year may be enrolled in Honours in the second year. Such students may take six courses as prescribed under the separate Divisions below.

Length of Course

Candidates for a degree with Honours will ordinarily take 25 courses in five years if admitted by Junior matriculation or twenty courses in four years if admitted by Senior matriculation. It is possible for candidates of exceptional ability to complete an Honours program in certain fields in three years from Senior matriculation by taking six courses in each winter session and one in each of the summers (if necessary, completing a graduation essay or thesis where required in the summer of the graduating year). Permission to take the accelerated program can be granted by the Honours Committee on recommendation of the department concerned.

Course Selection

A candidate for Honours must choose a major subject or an approved combination of subjects, normally before entry to the third year. Details of Honours courses may be found below under the respective departmental programs. Students wishing to qualify for entry to the Ontario College of Education in the course leading to the High School Assistant's Certificate Type A should consult the Registrar and the appropriate departments regarding course selection.

Standing

General regulations regarding standing are stated on p. 50. Additional regulations regarding the standing of candidates for an Honours degree are as follows:

A student's honours standing in any year's work will be determined by the Committee on Honours.

To receive credit towards an Honours degree, a candidate must obtain at least second class standing on the year's work.

Students who fail to maintain honours standing in any year must withdraw from Honours. Such students may apply for admission to the Pass course.

At graduation a student's honours standing is determined on the basis of his entire record, as First Class, High Second Class, or Second Class.

*Programs of Study**(a) Honours Programs in the Humanities*

At present Honours are available in English, French, and Classics. Certain programs of combined Honours may be arranged by permission of the Committee on Honours.

Students may enter Honours in the Humanities at the beginning of second year, or by transfer from the Pass course if second class standing has been obtained. The second year Honours prescription consists of the present second year of the Pass Arts course, with the option of a sixth course to be chosen in consultation with the department concerned.

(b) Honours Programs in the Social Sciences

At present Honours are available in Economics, History, Political Science, Public Administration, and Sociology. Combined honours in Economics and Political Science and in History and Political Science are also available.

Students may enter Honours in the Social Sciences at the beginning of second year, or by transfer from the Pass course if second class standing has been obtained. The course pattern for entrance into second year Honours in the Social Sciences is as follows:

4 of: Economics 210

History 220

Political Science 210

Psychology 210

Sociology 210 or 220

*1 of: English 210

Philosophy 210 or 220

†1 of: A second year language course

A second year science course

A second year Mathematics course

(c) *Honours Programs in the Natural and Physical Sciences*

At present Honours are available in Biology, Chemistry, Geology, Mathematics, Physics and Applied Physics.

Students may enter Honours in Science from Senior Matriculation or by transfer from the Pass course if second class standing has been obtained. The second year of the Honours science program consists of the present second year of Pass Science with the option of a sixth course to be chosen in consultation with the major department.

*Both to be taken before graduation.

†Two to be taken before graduation, one of which must be a science.

GRADUATE PROGRAM

Courses leading to graduate degrees are offered in the following: Biology, Canadian Studies, Chemistry, Economics, English, French, Geology, History, Mathematics, Physics, Political Science, Public Administration, Psychology.

Each candidate will be under the direction of a department, institute, or school, and must comply with any special conditions prescribed. The general regulations are as follows:

● *Master of Arts and Master of Science*

Admission Requirements

Candidates must have a Bachelor's degree with at least second class standing for admission. Those with pass degrees will normally require the equivalent of two years' full-time study, while those with honours degrees will normally require the equivalent of one year's full-time study. Candidates may be required to make up deficiencies in their background. A grade of B or better must be obtained in each course counted for credit towards the degree of M.A. or M.Sc.

Course Requirements

The normal requirement for the final year of the Master's degree will be five courses or the equivalent. Directed special studies may be counted as one course, while a substantial thesis based on the student's own research may be counted as two courses. Some courses may be selected from those open to undergraduates (300-399), but when such a course is taken for graduate credit the completion of additional assignments may be required. At least three courses (including the thesis) must be selected from those numbered 500-599.

Examinations

In addition to the usual examinations in individual courses, each candidate may be required to take a comprehensive examination, which may be oral or written at the discretion of the department concerned.

● *Doctor of Philosophy*

Admission Requirements

Candidates will ordinarily have already taken the degree of M.A. or M.Sc.

Course Requirements

The period of formal study and research required in the Ph.D. program will be at least two years of full-time study, or the equivalent, beyond the M.A. or M.Sc. qualification. The thesis will ordinarily carry a weight of about one half of the total requirement. The thesis must be a contribution to knowledge, and must demonstrate the candidate's capacity to undertake sustained research and to report the results in a fashion appropriate to the subject matter.

Examinations

- (a) A qualifying examination may be set at the beginning of the course.
- (b) A comprehensive examination covering prescribed fields will be set, ordinarily one year before the thesis is to be presented. This examination, which may be oral or written, or both, may include any work fundamental to a proper comprehension of the major subject.
- (c) After the thesis has been received and approved, a final oral examination on the subject of the thesis and related fields will be held.
- (d) Before the comprehensive examination (b), every candidate must satisfy the major department that he has a reading knowledge of two languages other than English, one of which must be French or German.

Time Limitation

A candidate who fails to complete the thesis within five years after the comprehensive examination must have his candidature reviewed.

THE INSTITUTE OF CANADIAN STUDIES

Committee of Management

1959-60

Chairman: A. DAVIDSON DUNTON, D.SC., LL.D., President of the University

Director: ROBERT L. McDougall, M.A., PH.D.

Members: PROFESSOR JAMES A. GIBSON, (Dean of the Faculty of Arts and Science), MUNRO BEATTIE (English), WILFRID EGGLESTON (Journalism), DAVID M. L. FARR (History), JAMES S. TASSIE (French), JOHN A. PORTER (Sociology), PAULINE JEWETT (Political Science), THOMAS N. BREWIS (Economics), GORDON C. MERRILL (Geography).

The Institute of Canadian Studies is an administrative body designed to promote scholarship in subjects which bear directly or indirectly on the cultural history of Canada. Its activities are guided by two assumptions: first, that the advanced student who has a special interest in Canadian studies can benefit from a broader approach to these studies than he is likely to make if he commits himself to the course and thesis requirements of a single department; second, that Canadian studies should be developed in a context that reflects the cosmopolitan origins of the country's traditions and an international rather than a strictly national outlook. In keeping with these assumptions the Institute offers the graduate student access to a co-ordinated program of inter-disciplinary research and instruction in Canadian subjects, and at the same time sponsors studies in relations between Canada and the parent states of Great Britain and France, between Canada and the United States, and between Canada and other members of the Commonwealth. It may be pointed out that the existence in the national capital of the National Library, the Library of Parliament, the Public Archives of Canada, the Dominion Bureau of Statistics, and the libraries of government departments and of embassies affords the graduate student unique facilities for research in the areas of study embraced by the Institute.

Degree of Master of Arts

General regulations governing admission to studies for the Master of Arts degree (p. 87) will apply. The diversified nature of the Institute's program, however, makes necessary two special regulations:

1. Students registering for graduate courses in disciplines in which they have had little or no undergraduate training may be required to undertake preliminary work in these fields.

2. A reading knowledge of French in a prerequisite for any graduate course offered by the Institute.

The length of the M.A. program in the Institute of Canadian Studies will normally be two years.

Courses

Eight courses in Canadian, Commonwealth, and comparative studies are offered by the Institute. Students suitably qualified may either

- (a) elect one or two of these courses in partial fulfilment of the requirements for the Master of Arts degree in English, History, French, or Political Science; or
- (b) elect three of them, which together with a thesis will complete the requirements for the Master of Arts degree in the Institute of Canadian Studies.

Prospective candidates should communicate with the Director at an early stage in their planning.

<i>Self-Government in Canada, 1783-1867</i> (CS 1)	Department of History
<i>Concepts of Empire, 1783-1931</i> (CS 6)	Department of History
<i>The Canadian Novel</i> (CS 10) (half course in the first term)	Department of English
<i>Le roman canadien de langue française</i> (CS 20) (half course in the second term of the same year as CS 10, Concluding four seminars to be held jointly with CS 10.)	Department of French
<i>Canadian Poetry</i> (CS 11) (half course in the first term in alternate years with CS 10)	Department of English
<i>La poésie canadienne de langue française</i> (CS 21) (half course in the second term of the same year as CS 11. Concluding four seminars to be held jointly with CS 11.)	Department of French
<i>The Press in Canadian Society</i> (CS 30)	Department of Journalism
<i>Canadian Social Structure and Institutions</i> (CS 60)	Department of Sociology
<i>Comparative Studies in the Literary Cultures of Canada and the United States</i> (CS 110)	Department of English
<i>Comparative Studies in the Literary Cultures of Canada and Australia</i> (CS 111)	Department of English

DETAILS OF SUBJECTS

The course numbering pattern is, in general, as follows:

- 50-99 Preparatory courses
- 100-199 Courses usually taken in the first year
- 200-299 Courses usually taken in the second year
- 300-399 Courses open to senior undergraduates or graduate students
- 500-599 Courses open to graduate students only.

ACCOUNTING

Professor; Chairman of the Department, 1959-60 . . . W. J. McDougall, B.A., C.A.
Sessional Lecturers A. A. Sterns, Lic.com., Dr. rer. pol.
C. N. Brennan, B.Comm., M.S., C.A.
A. B. Larose, B.Com., C.A.
N. R. Brining, B.Com., C.A.

Students who, after achieving the B.Com. degree, intend to proceed to professional accounting degrees—Chartered Accountant (C.A.), Certified Public Accountant (C.P.A.), Certified General Accountant (C.G.A.), or Registered Industrial and Cost Accountant (R.I.A.)—should consult the chairman of the department before entering the final year of the Commerce course.

ACCOUNTING 210. [2]. *Elementary Accounting*

The theory and practice of accounts, including the purposes of the double entry analysis of transactions; the establishment of financial classifications through the medium of books of original entry and the ledgers; the preparation of periodic financial statements and a study of the accounting entries required for that purpose; an introduction to the concepts of costs and of revenues and to the problems of effecting a periodic matching in the accounts; partnership and corporation accounting.

Day Division: Annually (lectures two hours a week; one-hour problem periods weekly).

Evening Division: Annually (lectures two hours a week; occasional problem periods).

ACCOUNTING 310. [3, 100]. *Intermediate Accounting*

The theory and practice of accounts with particular attention to the corporate form of business organization; accounting application of legal and policy considerations regarding capital stock, surplus, reserves, bonds and other liabilities; problems in the valuation of inventories, investments, plant and equipment and other assets; present status of accounting standards and terminology, with particular reference to the preparation of financial statements; techniques employed in the analysis and interpretation of accounting data.

PREREQUISITE: Accounting 210.

Day Division: Annually (lectures two hours a week; occasional problem periods).

Evening Division: Annually (lectures 2 hours a week, occasional problem periods).

ACCOUNTING 320. [4, 101]. *Advanced Accounting*

A course designed to provide further study in accounting theory and in specialized accounting problems, including those involved in consolidated statements; the use of accounting data in managerial control, including the utility of a financial budget; an introduction to the field of auditing, including the objectives and responsibilities of both the internal and external auditor.

PREREQUISITE: Accounting 310.

Day Division: 1959-60 (lectures two hours a week).

Evening Division: Not offered, 1959-60

ACCOUNTING 345. [7]. *Cost Accounting*

The field of cost accounting, including a study of the elements of costs; analysis of types of costs; distribution of cost elements to units of production in job cost systems and process cost systems; standard costs and analysis of cost variances.

PREREQUISITE: Accounting 310.

Evening Division: Annually (lectures two hours a week, occasional problem periods).

ACCOUNTING 380. [5, 102]. *Government Accounting and Finance*

A study of the financial administration and organization of the Canadian Government, including the preparation, legalization, and execution of the budget; the authorization and collection of revenues; government borrowing and public debt; parliamentary appropriations; the disbursement of public monies; the audit of the public accounts; the financial functions of Parliament; the Committees of Supply and Ways and Means; the Governor in Council; the Treasury Board; the Receiver General and Minister of Finance; the Department of Finance and the Comptroller of the Treasury; the Bank of Canada; the Auditor General; and the Public Accounts Committee. The course will include some reference to the financial administrative practices of other countries.

PREREQUISITE: Accounting 210.

Not offered 1959-60.

Discontinued Course

Last Offered

ACCOUNTING 340. [6]. *Cost Accounting and Auditing* 1951-52

BIOLOGY

Professor; Chairman of the Department, 1959-60

H. H. J. Nesbitt, M.A., Ph.D., D.Sc., F.L.S., F.R.E.S., F.Z.S.

Assistant Professor (Botany) W. I. Illman, B.A., M.Sc.

Assistant Professor (Zoology) Donald A. Smith, M.A., Ph.D.

Lecturer, and Curator of the Herbarium . . . Isabel L. Bayly, B.Sc., M.A.

Sessional Lecturer V. E. F. Solman, M.A., Ph.D.

Research Associates W. G. Beattie, M.D., F.R.C.S.(C)
I. J. Vogelfonger, M.D., M.Sc.D., F.I.C.S.

As Carleton University is located within easy access of the Canadian national botanical, entomological and zoological collections, it is advantageously placed for the teaching of the life sciences, and particularly the taxonomic aspects of these fields.

UNDERGRADUATE PROGRAM

Candidates who intend to read for Honour or Pass degrees in the Biological Sciences will find the course programs outlined below. All must pass a comprehensive examination at the conclusion of their period of study, have a reading knowledge of French, German, or Russian, and attend a seven-day field course arranged by the department at the beginning of their third or fourth year.

HONOURS COURSES

A. *B.Sc. with Honours in General Biology, Botany, or Zoology*

Basic requirements—The first and second years of the pass science course, preferably including in the second year: Botany 210 or Zoology 205; Chemistry 210, Physics 205.

Honours requirements—At least 15 courses beyond the second year including those of the following which have *not* been taken in the second year:

1. At least nine courses in Biology, including the following courses and half courses: Botany 210, Zoology 205, Botany 350 or Zoology 350, Biology 310, 350 and 375. The remaining courses, chosen in consultation with the Department, may be so arranged to emphasize General Biology, Botany, or Zoology.
2. Chemistry 210 and two additional courses in Chemistry.
3. Physics 205.

4. A course in English, one in Philosophy, and one other non-science, non-mathematics course to be chosen in consultation with the Department.

B. *B.Sc. with Honours in General Science for Experimental Biologists*
Basic requirements—As for Pattern A above.

Honours requirements—At least 15 courses beyond second year including those of the following which have *not* been taken in the second year:

1. At least eight courses in Biology including the following courses and half courses: Botany 210 and 350; Zoology 205 and 350; Biology 310, 350, 375.
2. Chemistry 210, 310 and 320.
3. Physics 205 and an additional course in Physics.
4. A course in English, one in Philosophy, and two other non-science, non-mathematics courses to be chosen in consultation with the Department.

For information about admission to the Ontario College of Education Interim High School Assistants' Certificate, Type A, students are invited to consult the Registrar.

PASS COURSE

Students who are reading for a pass Science degree with Biology as their major must take six courses in Biology including: Botany 210, Zoology 205, Biology 310, and Biology 350 (half course) plus either Botany 350 or Zoology 350 (half courses).

Students who wish to read for a pass degree in Arts are advised to consult with the department for the arrangement of their courses.

BIOLOGY 200. *Concepts and Methods in the Biological Sciences*

A course designed to illustrate the fundamental principles governing organic processes (animal and plant), the development and relationship of organisms, and the position of man in the organic world. This course is primarily intended for persons who do not intend to take further courses in Biology.

TEXT: Simpson, Pittendrigh & Tiffany, *Life, An Introduction to Biology* (Harcourt, Brace)

Day Division: Annually (lectures three hours a week, laboratory three hours a week).

Professor Nesbitt and Mrs. Bayly.

BIOLOGY 310.[5]. *Genetics*

A lecture and laboratory course to illustrate the fundamental principles of inheritance in animals and plants. In addition to his general laboratory work, the student will undertake an individual project.

TEXT: To be announced.

REFERENCE TEXTS: Sharp, *Fundamentals of Cytology* (McGraw-Hill).

Gates, *Human Genetics* (Macmillan).

Sinnott, Dunn and Dobzhansky, *Principles of Genetics* (McGraw-Hill).

PREREQUISITES: Botany 210 and Zoology 205.

Day Division: Annually (seminar or lecture two hours a week, laboratory four hours a week).

Mrs. Bayly

BIOLOGY 330.[15]. *General Microbiology*

The general principles and practice of microbiology. Consideration will be given to the biologic, economic, ecologic, and industrial importance and to the metabolic processes and the taxonomy of autotrophic, saprobic, and parasitic bacteria, yeasts, moulds and actinomycetes.

TEXT: To be announced.

PREREQUISITES: Botany 210, Zoology 205, and Chemistry 320 (may be taken concurrently).

Day Division: 1959-60 (lectures two hours a week, laboratory six hours a week).

Professor Illman

BIOLOGY 350. *Cellular Physiology*

A half course on the general physiology of plant and animal cells.

TEXT: Giese, *Cell Physiology* (Saunders).

PREREQUISITES: Botany 210, Zoology 205, Chemistry 210, Physics 200 or 205.

Day Division: Annually (lectures three hours a week, laboratory four hours a week, *first term*).

BIOLOGY 360. *Ecology*

A seminar course on the general ecology of plants and animals.

PREREQUISITES: Botany 210 and Zoology 205.

Evening Division: *Not offered in 1959-60*

BIOLOGY 375.[20]. *History of Biology*

A seminar course on the history of biology and biological theory.

REFERENCE TEXTS: Nordenskiöld, *The History of Biology* (Knopf).

Huxley, *Evolution, the Modern Synthesis* (Harpers).

Woodger, *Biological Principles* (Keegan-Paul).

Bertalanffy and Woodger, *Modern Theories of Development* (Oxford).

Darwin, *Origin of Species* (Everyman's)

Sullivan, *The Limitations of Science* (New American Library).

PREREQUISITES: Biology 310 and 350, Botany 210, Zoology 205, and Zoology 350 or Botany 350.

Not offered in 1959-60.

BOTANY

BOTANY 210.[1, Biology 12]. *General Botany*

A survey of the plant kingdom and a study of plant form and function.

TEXTS: Gibbs, *Botany* (McGraw-Hill).

Miller, *Within the Living Plant* (Blakiston).

Day Division: Annually (lectures two hours a week, laboratory four hours a week).

Evening Division: *Not offered in 1959-60.*

Professor Illman

BOTANY 310.[2]. *Comparative Anatomy of Telomous Plants*

A half course devoted to the anatomy of telomous plants with emphasis on their developmental history.

REFERENCE TEXTS: Eames and MacDaniels, *Introduction to Plant Anatomy* (McGraw-Hill).

Esau, *Plant Anatomy* (Wiley).

PREREQUISITE: Botany 210.

Day Division: 1959-60 (and alternate years) (lectures two hours a week, laboratory four hours a week, *first term*).

Mrs. Bayly

BOTANY 315.[2]. *Comparative Morphology and Evolution of Telomous Plants*

A half course tracing the development of the higher plants and the Bryophytes.

REFERENCE TEXTS: Foster & Gifford, *Comparative Morphology of the Vascular Plants* (Freeman).

Smith, *Cryptogamic Botany*, Vol. II. (McGraw-Hill).

PREREQUISITES: Botany 210 and 310.

Day Division: 1959-60 (and alternate years) (lectures two hours a week, laboratory four hours a week, *second term*).

Mrs. Bayly

BOTANY 320.[6]. *Taxonomy of the Flowering Plants*

A general survey of the flowering plants, the bases for classification and the history of taxonomy; an assigned project.

TEXT: Lawrence, *Taxonomy of Vascular Plants* (Macmillan).

PREREQUISITE: Botany 210.

Not offered in 1959-60.

BOTANY 324. Field Taxonomy

Though this course will be primarily concerned with field taxonomy and related laboratory work, there will be seminars and lectures on selected groups. Ecological associations will be considered and collections will be made. (Half course).

PREREQUISITES: Botany 210 and 320.

Not offered in 1959-60.

BOTANY 328. *Project in Taxonomy*

A seminar and reading course, including the preparation of a paper on an assigned project. (Half course).

PREREQUISITES Botany 320. (Botany 324 should be taken concurrently.)

Not offered in 1959-60.

BOTANY 330.[3]. *Cryptogamic Botany (Algae)*

A half course on the morphology, reproduction, and evolution of the algae.

PREREQUISITES Botany 210

Not offered in 1959-60.

BOTANY 332. *Cryptogamic Botany (Fungi)*

A half course on the morphology, reproduction, and evolution of the fungi.

PREREQUISITE: Botany 210.

Not offered in 1959-60.

BOTANY 350.[4b]. *Plant Physiology*

A half course on the fundamental principles of plant physiology.

TEXT: To be announced.

PREREQUISITES: Biology 350, Botany 210.

Day Division: Annually (lectures three hours a week, laboratory four hours a week, *second* term).

ZOOLOGY

ZOOLOGY 205. *General Zoology*

An introductory lecture and laboratory course on the fundamental principles of zoology.

TEXT: Villee, Walker & Smith, *General Zoology* (Saunders).

Day Division: Annually (lectures three hours a week, laboratory four hours a week).

Professor Smith

ZOOLOGY 305. *Invertebrate Zoology*

A lecture and laboratory course on the comparative anatomy, development, classification and evolution of the invertebrate animals.

TEXT: Borradaile, Eastham, Potts and Saunders, *The Invertebrata* (Cambridge).

REFERENCE TEXTS: Brown, *Selected Invertebrate Types* (Wiley).

Parker & Haswell, *Text-book of Zoology*, Vol. I (Macmillan).

Bullough, *Practical Invertebrate Anatomy* (Macmillan).

PREREQUISITE: Zoology 205.

Not offered in 1959-60.

ZOOLOGY 315. *Chordate Zoology*

A lecture and laboratory course on the comparative anatomy, development, classification and evolution of the chordates.

TEXT: Weichert, *Anatomy of the Chordates* (McGraw-Hill)

REFERENCE TEXTS: Parker & Haswell, *Text-book of Zoology*, Vol. II (Macmillan).

Young, *The Life of Vertebrates* (Oxford).

Young, *The Life of Mammals* (Oxford).

PREREQUISITE: Zoology 205.

Day Division: 1959-60 (lectures three hours a week, laboratory four hours a week).

Professor Smith

ZOOLOGY 350.[4b,Biology 4]. *Animal Physiology*

A half course on the fundamental principles of animal physiology, with emphases upon the comparative aspects of this field.

REFERENCE TEXTS: Giese, *Cell Physiology* (Saunders).

Mitchell, *Textbook of General Physiology* (McGraw-Hill).

Prosser et al., *Comparative Animal Physiology* (Saunders).

PREREQUISITES: Zoology 205 and Biology 350.

Day Division: 1959-60 (lectures three hours a week, laboratory four hours a week, *second* term).

Professor Smith

ZOOLOGY 355. *Embryology and Histology*

A lecture and laboratory course on the fundamental principles of the embryology and histology of vertebrates.

PREREQUISITES: Zoology 205 and 315.

Not offered in 1959-60.

ZOOLOGY 360.[5, Biology 7]. *Entomology*

A course on the morphology and physiology of representatives of the more important orders and families of insects.

REFERENCE TEXTS: Snodgrass, *Principles of Insect Morphology* (McGraw-Hill).
Wigglesworth, *Insect Physiology* (Methuen).

PREREQUISITES: Zoology 205 and 305.

Day Division: 1959-60 (lectures three hours a week, laboratory four hours a week).

Professor Nesbitt

ZOOLOGY 385. *Principles of Systematic Zoology*

A course devoted to an intensive study of the principles and methods of animal classification.

PREREQUISITE: Permission of the Department.

Day Division: 1959-60 (lectures and discussion hours arranged).

Professor Nesbitt

GRADUATE STUDIES

The department of Biology will welcome graduate students of the necessary competence in the following fields of study: Entomology including Acarology, Mammalogy, Mycology, Plant Physiology.

GRADUATE COURSES**BIOLOGY 500. *Advanced Genetics***

A seminar and problem course in the principles and practice of modern genetic theory.

PREREQUISITES: Biology 310 and a course in statistics.

Professor Illman

BOTANY 500. *Mycology*

An advanced course devoted to the morphology, reproduction, taxonomy, and evolution of the fungi.

PREREQUISITES: Botany 210 and 332.

Professor Illman

BOTANY 510. *Plant Physiology*

An advanced course in plant physiology.

PREREQUISITES: Biology 350 and Botany 350.

ZOOLOGY 510. *Acarology*

An advanced course devoted to the Acari (mites).

PREREQUISITE: Zoology 360.

Professor Nesbitt

ZOOLOGY 520. *Advanced Entomology I*

A course devoted to an advanced study of insect morphology and phylogeny.

PREREQUISITE: Zoology 360.

Professor Nesbitt

ZOOLOGY 525. *Advanced Entomology II*

A course devoted to an advanced study of insect taxonomy.

PREREQUISITE: Zoology 360.

Professor Nesbitt

ZOOLOGY 530. *Advanced Entomology III*

A course devoted to an advanced study of insect physiology.

PREREQUISITES: Biology 350, Zoology 350 and 360.

ZOOLOGY 535. *Taxonomy of the Vertebrates.*

A seminar course in the taxonomy and geographic distribution of the major groups of vertebrates.

PREREQUISITES: Zoology 205 and 315.

Professor Smith

Discontinued Courses

	<i>Last Cited</i>
Biology 11. <i>General Biology</i>	1948-49
Biology 110. [1]. <i>General Biology</i>	1956-57
Biology 320. [16]. <i>Principles of Microscopic Investigation of Biological Materials</i>	1958-59
Botany 355. <i>Plant Biochemistry</i>	1958-59
Botany 370. [5]. <i>Mycology</i>	1958-59
Zoology 210. [1, Biology 3] <i>General Zoology, Pt. I</i>	1956-57
Zoology 220. [2, Biology 2] <i>General Zoology, Pt. II</i>	1957-58
Zoology 310. [3, Biology 6]. <i>Introduction to Arthropods</i>	1958-59
Zoology 390. <i>Ecology</i>	1957-58

CHEMISTRY

<i>Professor</i>	. . . . .	J. M. Morton, M.Sc., M.A., Ph.D.
<i>Associate Professor; Chairman of the Department, 1959-60</i>	. . . . .	J. M. Holmes, B.Sc., M.A., Ph.D.
<i>Associate Professor</i>	. . . . .	P. M. Laughton, B.A., M.Sc., Ph.D.
<i>Assistant Professor</i>	. . . . .	D. R. Wiles, B.Sc., B.Ed., M.Sc., Ph.D.
<i>Assistant Professor</i>	. . . . .	A. G. Forman, B.A., M.Sc.
<i>Demonstrator</i>	. . . . .	R. T. Elworthy, M.B.E., B.Sc., Ph.D.

PASS COURSE

A pass-course student majoring in Chemistry should have completed Chemistry 110 and 210 before entry to the third year. It is recommended that Physics 205 and Mathematics 211 be taken in second year and Physics 305 and Mathematics 311 in third year. At least four Chemistry courses beyond Chemistry 210 are required, including Chemistry 310 and 320 in the third year and 330 in the fourth.

HONOURS COURSES

General regulations concerning admission, standards, and length of course are found on pp. 81-3 of the calendar. Normally students enter the Honours program in Chemistry in their third year. In exceptional circumstances a candidate may enter Honours directly from high school in the second year and proceed in the manner outlined in the general regulations.

The first and second years are those of the pass science course, including Chemistry 210, Mathematics 211, and Physics 205. At least 16 courses are required beyond the second year, including the following:

1. At least seven courses in Chemistry, including Chemistry 310, 320, 330, 340, 350 and 390.
2. Mathematics 311.
3. Physics 304 and 305.
4. Further supporting science and Mathematics courses.
5. Three additional non-science, non-Mathematics courses normally including one in language other than English.

In consultation with the Department, options may be chosen which will satisfy the requirements for admission to the Ontario College of Education for the High School Assistants' Certificate, Type A, either in Science or in Physics and Chemistry.

Each candidate for Honours in Chemistry is required as part of Chemistry 390 in the final year to solve a research problem and write a thesis. Four typewritten copies of this thesis are to be deposited with the Chemistry Department not later than April 15, of which one copy may be returned to the candidate. Each candidate is also required to demonstrate a reading knowledge of two of scientific French, German and Russian.

CHEMISTRY 110. [1]. *General Chemistry*

An introductory course emphasizing the fundamental laws and principles of chemistry. The more important metals and non-metals and their compounds are studied.

TEXTS: Ritter, *An Introduction to Chemistry* (J. Wiley, 1955).

Malm and Frantz, *College Chemistry in the Laboratory 2* (W. H. Freeman and Co., 1954).

Pierce and Smith, *General Chemistry Workbook* (W. H. Freeman and Co., 1958).

Day Division: Annually (lectures three hours a week, laboratory three hours a week).

Professor Forman

CHEMISTRY 210. [6]. *Qualitative Analysis and Elementary Physical Chemistry*

First Term: The ideal gas law, liquids, solids, heterogenous equilibrium, electrochemistry and colloids. The laboratory work will include experiments in elementary physical chemistry and quantitative determinations.

Second Term: Atomic structure, electronic theory of valence, oxidation and reduction, chemical equilibrium as applied to solutions of ionized substances and complex ions, the theory of qualitative separations. The laboratory work will include practice in the separation of common cations.

TEXTS: To be announced.

Sorum, *Semimicro Qualitative Analysis* (Prentice-Hall, 2nd Edition, 1953).

PREREQUISITES: Chemistry 110 and Mathematics 110 and 112.

Day Division: 1959-60 (lectures three hours a week, laboratory three hours a week).

Evening Division: Not offered 1959-60.

Professors Morton, Wiles, and Forman

CHEMISTRY 310. [8] *Physical Chemistry*

An introduction to the principles of physical chemistry, including such topics as: kinetic theory of gases, liquids and solids, thermodynamics and thermochemistry, properties of solutions from kinetic theory and thermodynamic point of view, equilibrium in homogeneous and heterogeneous systems with applications of thermodynamics, electrochemistry and surface phenomena. Laboratory work and solutions of problems on each section form an important part of this course.

TEXTS: Daniels, *Outline of Physical Chemistry* (J. Wiley, 1955).

Daniels, Matthews and Williams, *Experimental Physical Chemistry* (McGraw-Hill, 5th edition, 1956).

PREREQUISITES: Chemistry 210 and Mathematics 210.

Day Division: Annually (lectures three hours a week, problems one hour a week, laboratory three hours a week).

Evening Division: Not offered 1959-60.

Professor Holmes

CHEMISTRY 320. [2]. *Organic Chemistry*

An introductory course in organic chemistry, consisting of a survey of the chemistry of aliphatic and simple aromatic compounds. Emphasis is placed on the more general theoretical principles concerning structure and reactivity. The laboratory work provides practice in preparations, reactions, and detection of the more common functional groups.

TEXTS: Noller, *Chemistry of Organic Compounds* (W. B. Saunders Co. 1957).

Fieser and Fieser, *Organic Chemistry* (D. C. Heath, 1956).

Coleman, Wauzonek and Buckles, *Laboratory Manual of Organic Chemistry* (Prentice Hall, 1949).

PREREQUISITE: Chemistry 110.

Day and Evening Divisions: 1959-60 (lectures three hours a week, laboratory three hours a week).

Professors Laughton and Forman

CHEMISTRY 330.[7]. *Quantitative Analysis*

A course in quantitative analysis covering the fundamental methods of volumetric and gravimetric analysis.

TEXTS: Hamilton and Simpson, *Talbot's Quantitative Analysis* (Macmillan, 11th Edition, 1958).

PREREQUISITE: Chemistry 210.

Day Division: Annually (lectures two hours a week, laboratory six hours a week).

Evening Division: Not offered 1959-60.

Professors Morton and Wiles

CHEMISTRY 340.[4]. *Intermediate Organic Chemistry*

The lecture work consists of a survey of alicyclic, polynuclear aromatic and heterocyclic chemistry, with emphasis on methods of structure proof and synthesis, and the application of the electronic theory to problems of structure and reactivity. The laboratory work on preparative techniques, and qualitative identification of organic compounds singly and in mixtures, is accompanied by paper problems of the same kind.

TEXTS: Fieser and Fieser, *Organic Chemistry* (D. C. Heath, 3rd Ed. 1956).
Shriner, Fuson and Curtin, *Systematic Identification of Organic Compounds* (Wiley, 1956).

PREREQUISITE: Chemistry 320.

Day Division: Lectures three hours per week, laboratory three hours per week.

Evening Division: Not offered 1959-60.

Professor Laughton

CHEMISTRY 350.[10]. *Advanced Physical Chemistry*

Selected topics in physical chemistry, including kinetics of chemical reactions, phase rule and phase equilibria, further discussions of electrochemistry and surface chemistry, elementary quantum theory and thermodynamics. Laboratory work will include selected, more advanced experiments with emphasis on glass blowing and high vacuum techniques.

TEXT: Moore, *Physical Chemistry* (Prentice-Hall, 1955).

REFERENCE TEXT: Glasstone, *Textbook of Physical Chemistry* (Van Nostrand, 1948) and such texts in kinetics, phase rule, electrochemistry and thermodynamics as may be assigned from time to time.

PREREQUISITE: Chemistry 310, and permission of the instructor.

Day Division: Annually (lectures three hours a week, problems one hour a week, laboratory three hours a week).

Professor Holmes

CHEMISTRY 360.[11]. *Advanced Inorganic Chemistry*

The structure of the atom, the electronic theory of valence, structures of complex inorganic compounds, metal amines, the properties of the elements in relation to their positions in the periodic table, radioactivity, isotopes, radiochemistry and the use of isotopic tracers. The laboratory work includes the preparation of a number of complex inorganic compounds, colloidal dispersions and the carrying out of some unusual reactions.

TEXT: Glasstone, *Sourcebook on Atomic Energy* (Van Nostrand, 1958).

REFERENCE TEXTS: Emelius and Anderson, *Modern Aspects of Inorganic Chemistry* (Routledge and Kegan Paul, 1952).

Moeller, *Inorganic Chemistry, An Advanced Textbook* (John Wiley and Sons, 1952).

PREREQUISITE: Chemistry 310, and permission of the instructor.

Day Division: 1959-60 (lectures three hours a week, laboratory three hours a week).

Professor Wiles

CHEMISTRY 370.[12]. *Advanced Organic Chemistry*

Selected topics such as electronic theories of structure, the mechanisms of organic reactions, stereochemistry, and the chemistry of more complex naturally occurring substances. Students will be required to demonstrate a capacity for interpreting and criticizing the original literature.

TEXT: To be announced.

PREREQUISITE: Chemistry 340, and permission of the instructor.

Day Division: 1959-60 (lectures three hours a week, laboratory three hours a week).

Professor Laughton

CHEMISTRY 375.[9]. *Biochemistry*

A survey course in plant and animal biological chemistry arranged in conjunction with the Biology Department and available only to advanced students. (This course is listed also as Biology 350.)

PREREQUISITE: Permission of the Department.

Day Division: Not offered 1959-60.

CHEMISTRY 390.[13]. *Research Project and Seminar*

Senior students in honours chemistry will do a research project under the direction of one of the members of the Department.

A seminar will be conducted at which advanced students will present reports on recent progress in selected fields of chemistry, and from time to time experts in certain fields from outside the College will be invited to speak. The attendance at such a seminar or similar meetings at the National Research Council is intended to bring the student into close contact with specific problems in current research.

Day Division: Annually (laboratory hours arranged, seminar periods usually two hours a fortnight).

Members of the Department

GRADUATE STUDIES

Graduate studies at M.Sc. and Ph.D. levels are offered in the department in fields of organic chemistry, physical and surface chemistry, and inorganic and radiochemistry. Normally graduate work in Chemistry must be conducted full time in residence and research must be done in the department's laboratories under supervision of the staff. We are also fortunate in having the co-operation of some of the finest laboratories and libraries in Canada available in the Ottawa area. These contacts range from assistance in course work and availability of advanced research equipment to attendance at seminars and research consultation.

In addition to the general requirements, candidates for the M.Sc. in Chemistry are required to pass a comprehensive examination, and to demonstrate a reading knowledge of two of scientific French, German, and Russian.

CHEMISTRY 510. *Contemporary topics in Physical Chemistry*

Professor Holmes

CHEMISTRY 520. *Contemporary topics in Organic Chemistry*

Professors Laughton and Forman

CHEMISTRY 530. *Contemporary topics in Inorganic and Radiochemistry*

Professors Morton and Wiles

CHEMISTRY 590. *Graduate research*

Members of the department

Discontinued Course

Last offered

CHEMISTRY 315.[5]. *Chemistry of Engineering Materials* 1957-58

CLASSICS

Assistant Professor;

Chairman of the Department, 1959-60 . . . F. Ellenor M. Swallow, M.A., Ph.D.

Lecturer Peter L. Smith, M.A., Ph.D.

Qualified students may read for Honours in Classics, or students may elect Latin, or Greek, or a combination of the two as their major field of study in a Pass course; or students who are reading for honours in another discipline may elect either Latin or Greek as a minor.

Those interested are invited to discuss possible courses or programs with the departmental chairman. Offerings for 1959-60 are as follows:

GREEK

GREEK 115. *Introduction to Language and Reading*

A beginning course to introduce students not only to grammar and syntax, but also to the reading of continuous prose. (Equivalent of former Greek 51 and Greek 110; one full credit).

Day Division: 1959-60 (lectures and practice periods four hours a week).

Professor Swallow

GREEK 210. [2]. *Literature and Reading*

Study of the forms and development of Greek literature. *Reading:* Euripides, one play; Lysias, select orations. Some time will also be devoted to prose composition.

PREREQUISITE: Greek 115 or the equivalent

Day Division: 1959-60 (lectures three hours a week).

Dr. Smith

GREEK 310. *Homer and Herodotus*

Early poetry and the first prose; differing proportions of myth and history.

PREREQUISITE: A 200 course, or permission of the department.

Day Division: 1959-60 (two tutorial hours a week).

Professor Swallow

GREEK 360. *Aristophanes*

Old and New comedy in Greece and their contributions to later drama.

PREREQUISITE: A 200 course, or permission of the department.

Day Division: 1959-60. (two tutorial hours a week).

To be announced

LATIN

LATIN 110. [1]. *Language and Reading*

Review of grammar and syntax; composition. *Reading:* in Cicero and Ovid.

PREREQUISITE: Junior Matriculation Latin or the equivalent.

Day Division: 1959-60 (lectures three hours a week).

Dr. Smith

LATIN 210. [2] *Literature and Reading*

Study of the history of Latin literature. *Reading:* Selections from various authors throughout the classical period.

PREREQUISITE: Latin 110 or the equivalent.

Day Division: 1959-60 (lectures three hours a week).

Professor Swallow

LATIN 330. *Comedy and Satire*

A study through Plautus, Horace and Juvenal of the derived art of comedy and the native development of satire in Latin literature.

PREREQUISITE: A 200 course, or permission of the department.

Day Division: 1959-60 (two tutorial hours a week).

Dr. Smith

LATIN 370. *Virgil and the Epic Tradition*

An exploration of the field of epic poetry in the ancient world, with Virgil as the focal point of study.

PREREQUISITE: A 200 course, or permission of the department.

Day Division: 1959-60. (two tutorial hours a week).

Professor Swallow

CLASSICS 395. *Seminar*

Special problems. Required of students taking their major work, or reading for Honours, in Classics.

Day Division: 1959-60 (seminar two hours a week).

Professor Swallow

CLASSICAL CIVILIZATION

CLASSICAL CIVILIZATION 270. *Greece in the Ancient World.*

The history and civilization of classical Greece with special attention to the development of her characteristic institutions. Extensive reading from Greek literature, in English translation, will illustrate the patterns and growth of Greek thought. (This course is also listed as History 270).

Evening Division: 1959-60 (lectures two hours a week). This course will be alternated with Classical Civilization 280 (Rome in the Ancient World).

Dr. Smith

Other offerings, given in rotation with the Greek and Latin "300" courses listed above, are: Greek-250: Prose composition; 320: Thucydides and historiography; 330: The tragedians; 340: Philosophy; 350: Lyric and reflective poetry; 370: The Attic orators.

Latin-250: Prose composition; 315: The letter-writers; 325: Lyric and elegy; 340: Oratory in theory and practice; 350: The Latin historians; 360: The writers of philosophy.

COMMERCIAL LAW

Sessional Lecturer M. E. Corlett, B.A.

COMMERCIAL LAW 210. [COMMERCE 1]. *Commercial Law*

The law of contract and agency, sale of goods, negotiable instruments, partnerships and companies, bankruptcy and insolvency, bills of sale and chattel mortgages.

Day Division: Not offered, 1959-60.

Evening Division: Annually (lectures three hours a week).

Mr. Corlett

ECONOMICS

<i>Professor</i>	. . . . .	H. S. Gordon, M.A.
<i>Associate Professor; Chairman of the Department, 1959-60</i>		H. E. English, B.A., Ph.D.
<i>Associate Professor</i>	. . . . .	T. N. Brewis, M.Com., Ph.D.
<i>Assistant Professor</i>	. . . . .	S. F. Kaliski, M.A.
<i>Lecturer</i>	. . . . .	Robert L. Comeau, M.A.
<i>Sessional Lecturers</i>	. . . . .	Virginia Sawyer, A.B., M.A., M.B.A. S. J. Handfield-Jones, M.A.

Students who intend to major in Economics should take Economics 210 in their second year. At least four additional courses in Economics will be required during the two subsequent years, and the choice of courses for each year must be approved by the Chairman of the Economics Department.

Students who wish to major (or to take honours) in Economics will be expected to fulfill the summer reading requirements.

HONOURS COURSES

Economics. Honours programs may be entered from the Honours second year in the Social Sciences (see p. 85), or by transfer from the Pass Course if second class standing has been obtained. Economics 210 should be taken during the second year.

The honours requirements consist of additional work in Economics with a minor in allied social sciences. The student's program for the third and subsequent years will be planned in consultation with the Chairman of the Department of Economics.

Combined Honours in Economics and Political Science: Students intending to take this course should take Economics 210 or Political Science 210 (or preferably both) in the second year. The choice of courses in subsequent years will be subject to the approval of the chairmen of the two departments. The honours requirements include at least six courses in Economics and six courses in Political Science. These will be arranged so that the student may transfer either to full honours in Economics or to full honours in Political Science at the end of the fourth year, if he then wishes to specialise more intensively.

ECONOMICS 210. [2]. *Principles of Economics*

The course contains four sections: First, the basic ingredients of the economy—resources and wants; second, the organization of the economy and the basic allocation process by which resources are directed to the satisfaction of various human wants; third, the determination of a nation's income, and the associated problems of unemployment and inflation; and finally, international economics.

Day Division: Annually (lectures two hours a week, group discussion one hour a week).

Evening Division: Annually (lectures two hours a week).

Professors Brewis and English, and Members of the Department

Summer Session, 1959 (lectures five hours a week).

ECONOMICS 300. *Economic Theory: Intermediate*

The modern analysis of production, distribution and exchange with special reference to the determination of the conditions which maximise social welfare. The major causes of departure from the social welfare optimum in a full employment economy, with particular attention to imperfections in competition. An introduction to the theory of economic growth.

PREREQUISITE: Economics 210.

Day Division: Annually (lectures two hours a week).

Evening Division: 1959-60.

Professors English and Kaliski

ECONOMICS 310.[8, 103]. *Money and Banking*

The theory and practice of banking and finance, with special reference to the economic functions of financial institutions. The theory of monetary policy and central banking and its Canadian applications. The analysis of major problems of an organizational nature: inflation and unemployment. The theory and practice of international finance.

PREREQUISITE: Economics 210.

Day Division: Annually (lectures two hours, discussion one hour a week).

Evening Division: 1960-61 and alternate years.

Mr. Comeau

ECONOMICS 315.[10, 105]. *Economic History*

This course treats the development of economic institutions, especially since the Middle Ages, and stresses an examination of those aspects of history which may be used to explain the character of the principal economic institutions and practices of the present day.

PREREQUISITE: Economics 210, or the permission of the instructor.

Not offered, 1959-60.

ECONOMICS 320.[16]. *Statistical Methods in the Social Sciences*

An introductory course dealing with the use of statistical methods in economics and the other social sciences. The principal statistical measurements will be studied. The use of statistical analysis as a method for the precise and reliable acquisition of knowledge will be stressed. The misuse of statistical information will be examined. A critical approach to statistical methods will be maintained throughout the course. (This course will yield a half credit only, if Mathematics 230 has been taken for credit) (This course is listed also as Sociology 355).

PREREQUISITE: Mathematics 115, and one of Economics 210, Political Science 210, Psychology 210 or Sociology 210; or the permission of the Department.

Day Division: Annually (lectures two hours a week; problem work).

Summer Session, 1959 (lectures five hours a week).

Professor Kaliski and Mrs. Sawyer

ECONOMICS 330.[Commerce 2]. *Business Economics*

Business practices in pricing, advertising, and the marketing of goods are examined in the light of economic theory. Consideration is given also to the costs of distribution in the economy as a whole and to the influence of government in the maintenance of competition. The second part of the course is concerned with the financing of business enterprise, the function of the capital market, and the significance of the supply of finance for economic stability and development.

PREREQUISITE: Economics 210.

Not offered, 1959-60.

ECONOMICS 335.[Commerce 4]. *Labour Economics and Industrial Relations*

An examination of the position of the labourer in the Canadian economy and of the economic and sociological theory related to this study. The place and function of the government in the relationship between management and labour. Trade unions—their aims and history. Collective bargaining—its purpose and meaning to industry and to labour.

PREREQUISITE: Economics 210.

Not offered, 1959-60.

ECONOMICS 340.[7, 102]. *International Trade*

It is the aim of this course to provide the student with a wide working basis. The first half of the course deals with the mechanics of international trade, the foreign exchange market, bills of exchange, the balance of payments, tariffs, foreign exchange control, etc. Attention is then turned to the theory of international trade, from the more primitive concepts down to the recent analytical structures. Throughout the balance of the course some attention will be given to special studies of topical interest. But the primary aim is to put to practical use the knowledge of the mechanics and theoretical tools of international trade gained earlier in the course, through an interpretation of several phases of Canadian economic history relating to the international field.

PREREQUISITE: Economics 210.

Day Division: 1959-60.

Professor Kaliski

ECONOMICS 345.[11, 106]. *Public Finance and Fiscal Policy*

The course deals with the place of public expenditures and revenue in the national economy, taxation, debt management, and the role of fiscal policy in economic stabilisation.

PREREQUISITE: Economics 310.

Day and Evening Division: 1959-60 (lectures two hours a week).

Professor Brewis

ECONOMICS 350.[12, 107]. *Economic Policy of Canada*

Consideration will be given to some of the major features of Canadian economic policy both in the domestic and international field, and these features will be reviewed in the light of economic theory.

PREREQUISITE: Economics 310.

Day Division: 1959-60 (lectures two hours a week).

Professor Brewis

ECONOMICS 355. *Industrial Organization and Public Policy*

An analysis of the organization of Canadian industry, with reference to associated U.S. industry where necessary. A few representative industries are examined in some detail. Price theory is used to distinguish economic from institutional factors affecting the structure of the economy. Emphasis is laid upon public policies which affect, intentionally or otherwise, the organization and behaviour of industry, e.g., public utility regulation, control of restrictive practices, commercial policy, and price supports.

PREREQUISITE: Economics 300.

Not offered, 1959-60.

ECONOMICS 360. [3]. *The Economic Development of Canada*

(Offered in the Department of History as History 360)

ECONOMICS 365. [9]. *Modern Economic Theory*

The first part of the course will deal with the theories of consumption, production, and exchange. The second part will deal with the theory of income and its distribution. Questions relating to the stability and growth of aggregate income will be discussed.

PREREQUISITE: Economics 210 and one other course in Economics.

Not offered, 1959-60.

ECONOMICS 370. [15]. *History of Economic Thought*

The principal developments in economic theory and doctrine especially during the nineteenth century. The principal theorists and the influential popular writers of the period. The relation of economic theory and doctrine to contemporaneous social, political and philosophical ideas and to economic and political events.

PREREQUISITE: Economics 210.

Day Division: 1959-60 (seminar two hours a week).

Professor Gordon

ECONOMICS 375.[14]. *Comparative Political Economy*

In this course an attempt is made to establish the relationship between ideology, economic theory, and actual organization in the principal contemporary economies. The first half of the course is concerned with the origin and character of the economic institutions of the United States and Canada. The second half includes a study of the economic organization of the Soviet Union, the United Kingdom, and other economies.

PREREQUISITES: Economics 210. Beginning in 1960-61, Economics 300 will be ordinarily required as a prerequisite also.

Evening Division: 1959-60 (lectures two hours a week).

Professor English

ECONOMICS 390.[100]. *Tutorial in Economics*

During the term the student will write a series of papers which will be the subjects of discussions between him and his tutor. The topics of the papers will be selected in the light of the student's knowledge, interests and objectives; tutors will be assigned on the same bases.

PREREQUISITE: Permission of the Department.

Day Division: Annually (tutorial hours arranged).

Evening Division: Annually (tutorial hours arranged).

ECONOMICS 391.[101]. *Tutorial in Economics*

An additional tutorial in economics may be taken subsequent to or concurrently with Economics 390. Methods of study will be designed to accord with the student's individual needs.

PREREQUISITE: Permission of the Department.

Day Division: Annually (tutorial hours arranged).

Evening Division: Annually (tutorial hours arranged).

ECONOMICS 395. *Honours Essay*

A student taking honours in economics may write an honours essay during his final year. The essay will count for one course credit.

PREREQUISITE: Permission of the Department.

GRADUATE STUDIES

The Department of Economics offers studies leading to the degree of Master of Arts with specialization in any of the following fields:

Money and Banking, Public Finance, International Trade, Natural Resources, Industrial Organization and Public Policy, Comparative Political Economy, History of Economic Thought.

A student wishing to enter the M.A. program must have an honours degree in economics or its equivalent in both content and standing. A candidate may be required to rectify any deficiencies in his undergraduate training by taking the appropriate undergraduate courses in Carleton in addition to his work for the M.A. A student possessing a pass degree and no further training will ordinarily be required to take a qualifying year (5 courses) before being admitted to M.A. candidacy.

A candidate for the M.A. in economics will (1) take the three graduate seminars listed below, (2) present a thesis and (3) write comprehensive examinations in the fields covered by the seminars and the general field in which the thesis is written. Grades of B or better must be obtained throughout in seminars, comprehensives, and thesis. At present the graduate program is offered in the evening division only and a student entering the M.A. program without qualification will normally take three years to complete his requirements for the degree.

GRADUATE SEMINARS

ECONOMICS 500. *Advanced Economic Theory*

Professor Gordon

ECONOMICS 510. *Applied Economics: currently, The Canadian Economy**Not offered, 1959-60.*

Professors Brewis and English

ECONOMICS 520. *Research Methods**Not offered, 1959-60.*

Members of the Department

*Discontinued Courses**Last offered*ECONOMICS 5. [100]. *Natural Resources of Canada* 1949-50ECONOMICS 6. [101]. *Agricultural Economics and Policy* 1950-51ECONOMICS 13. *Comparative Economic Institutions* 1949-50ECONOMICS 290. *Economics for Engineers, I* 1953-54ECONOMICS 305. [4]. *Economics for Engineers* 1954-55**ENGINEERING***Director of the School* John Ruptash, B.Sc., M.A.Sc., Ph.D.*Assistant Professor, Assistant Director* S. G. Tackaberry,
C.B.E., B.A.Sc., M.E.I.C.*Associate Professors* . . . E. E. Goldsmith, Dipl.Eng., D.I.C., M.E.I.C., A.M.I.E.E.
R. Putnaerglis, Mech.Eng., M.Eng., P.Eng.*Assistant Professors* D. H. Minty, B.Sc.
Whitman Wright, B.A.Sc.*Sessional Lecturer* R. C. McDonald, B.A.Sc.

Courses marked * are not offered in 1959-60, and the details are subject to possible modification as the program is developed. Courses may be taken only by candidates for the Degree in Engineering.

ENGINEERING 211. *Mechanics I.*

Dynamics: Rectilinear and curvilinear particle motion; displacement, velocity, acceleration, mass-acceleration, impulse-momentum, work-energy; relative motion; friction.

Statics: Equilibrium of forces on particles and rigid bodies. centroids. analysis of structures.

Fluid Mechanics: Properties, statics. applications of continuity and Newton-Bernoulli equations; kinematics; similitude; measurement of flow; pipe flow.

Lectures 3 hours a week both terms.

Laboratory 3 hours a week, second term.

Professor Tackaberry

Fluid Mechanics Laboratory in Thermodynamics I, Year 2.

TEXTS: Higdon and Stiles, *Engineering Mechanics*.Binder, *Fluid Mechanics*.REFERENCE BOOK: Rouse and Howe, *Basic Fluid Mechanics*.

ENGINEERING 221. *Engineering Drawing.*

Fundamental drawing techniques; orthographic projection; freehand and instrument drawing; auxiliary views; sections and conventions; Descriptive Geometry including point, edge and normal views, engineering problems involving points, straight lines and planes, curved lines, curved and warped surfaces, intersections and developments; threads and fasteners; dimensioning practice; pictorial drawings including exploded views; piping drawings; welding symbols; structural drawings; detail and assembly machine drawings.

Lectures 1 hour a week *both* terms.

Laboratory 5 hours a week *both* terms.

TEXTBOOK: *Engineering Drawing* — French and Yierck — 8th Edition.

REFERENCES: *Technical Descriptive Geometry* — Wellman

WORKBOOK: *Engineering Drawing Problems* — Vierck, Cooper and Machovina
Professor Tackaberry

ENGINEERING 231. *Surveying.*

Methods of measurement and error theory. General principles and practice of surveying with chain, transit and level. Field Work.

TEXT: Breed, *Surveying.*

Lectures 1 hour a week, *both* terms.

Mr. McDonald

ENGINEERING 235. *Surveying Field Work*

A summer school held during a four week period in April-May following year I.

Mr. McDonald

ENGINEERING 311. *Mechanics II*

Kinematics: Relative displacement, velocity and acceleration in mechanisms; slide cranks; gears; gear trains; belts.

Dynamics: Moment of inertia: rigid body translation and rotation; relative motion; angular impulse-momentum; friction, belts, rolling with slipping; vibrations; introduction to vector mechanics, gyroscope.

LABORATORY: Elementary experimental engineering and methods of measurement; graphical kinematics problems.

Lectures 2 hours a week, *both* terms.

Laboratory 5 hours a week *second* term.

TEXTS: Guillet, *Kinematics of Machines.*

Higdon and Stiles, *Dynamics.*

Professor Goldsmith

ENGINEERING 355. *Engineering Analysis*

Quantitative analytical methods new to engineering; statistics and probability; operations research; linear programming; Monte Carlo methods; relaxation; etc.

Lectures 2 hours a week, *both* terms.

TEXT: To be announced.

ENGINEERING 361. *Mechanics of Materials I*

Physical metallurgy: structure alloys, heat treating, corrosion.

Analysis of stress and strain: beams, shafts, columns, hangers, frames and joints, Mohr's Circle, failure theories and energy methods.

LABORATORY: Microscopic and macroscopic examination of metals; heat treatment of metals; hardness testing. Types of Machine Tools and other shop equipment; care of tools and equipment, Safety Regulations; bench work; measuring devices; cutting tools; abrasive wheels.

Lectures 2 hours a week *both* terms.

Machine Shop 5 hours a week *first* term.

Metallurgy Laboratory 3 hours a week *second* term.

TEXTS: Popov, *Mechanics of Materials.*

Smith, *Principles of Physical Metallurgy.*

Professor Putnaerglis

ENGINEERING 371. *Summer Essay I.*ENGINEERING 381. *Thermodynamics I*

First and second laws of thermodynamics; non-flow and flow equations; reversibility; entropy; dynamics of compressible fluids; boundary layer theory; heat transfer.

Lectures 3 hours a week *both* terms.

Laboratory 3 hours a week, *first* term.

TEXT: Mooney, *Introduction to Thermodynamics and Heat Transfer.*

Professor Minty

ENGINEERING 410. *Electrical Engineering.*

Electrostatic and electromagnetic theories, circuits, materials and measurements; AC and DC machinery; power generation and transmission; electronic theory, components, rectification, amplification, and modulation; instrumentation.

Lectures 4 hours a week, *both* terms.

Laboratory 3 hours a week, *both* terms.

Professor Goldsmith

ENGINEERING 420. *Mechanics of Machines.*

Dynamics and design of mechanisms for stress, shock and vibration; analytical problems.

Lectures 2 hours a week, *both* terms.

Laboratory 3 hours a week, *both* terms.

ENGINEERING 430. *Mechanics of Materials II.*

Introduction to the mathematical theory of elasticity; prototype cases; rigid frames; arches; plates; shells; analytical problems.

Lectures 2 hours a week *both* terms.

Strength Laboratory 3 hours a week *first* term.

Problems Laboratory 3 hours a week, *second* term.

ENGINEERING 440. *Mechanics of Materials III.*

Modern concepts of atomic and crystal structure; surface properties; chemical, electrostatic and metallic bonds.

Lectures 2 hours a week, *both* terms.

ENGINEERING 450. *Thermodynamics II.*

Thermodynamics of combustion; heat transfer; refrigeration and air conditioning systems; power plants; turbo-machinery.

Lectures 2 hours a week, *both* terms.

Laboratory 3 hours a week, *both* terms.

TEXT: Soo, *Thermodynamics of Engineering Science.*

*ENGINEERING 460. *Engineering Design.*

One of the following three to be elected:

- a) Electrical Engineering: design of electrical machinery systems.
- b) Mechanical Engineering: design of machinery.
- c) Structural Engineering: design in reinforced concrete and steel of beams, girders, columns, retaining walls and foundations; alternate designs of a complete structure will be required of the student.

Lectures 3 hours a week, *both* terms.

Laboratory 15 hours a week, *both* terms.

ENGINEERING 472. *Summer Essay II.**ENGINEERING 473. *Summer Essay III.*

ENGINEERING 480. *Professional Practice.

Planning investment in engineering projects and industrial plants; income tax effects on rate of return, replacement, etc; jurisprudence; property and ownership; contracts; engineers' and architects' laws; liability; experts and evidence.

Lectures 2 hours a week, *both* terms.

****Technical Elective***

One of the following to be elected from those offered:

- a) An additional course in mathematics;
- b) An additional course in physics;
- c) An additional course in chemistry;
- d) An engineering graduate course.

Humanities I.

A first course in a humanity or social science of a sequence of three to be elected from those offered to the engineering students.

Humanities II.

A second course in the subject in Humanities I.

Humanities III.

A third course in the subject started in Humanities I, or a first course in an associated subject.

Discontinued Courses

Last offered

ENGINEERING 295.[14]. <i>Engineering and Society</i>	1951-52
ENGINEERING 240.[7]. <i>Engineering Problems I</i>	1953-54
ENGINEERING 340.[8]. <i>Engineering Problems II</i>	1953-54
ENGINEERING 390. <i>Public Speaking for Engineers; henceforth English 230</i>	1955-56
ENGINEERING 210.[1]. <i>Applied Mechanics I</i>	1956-57
ENGINEERING 220.[12]. <i>Mechanical Drawing I</i>	1956-57
ENGINEERING 235.[9]. <i>Surveying Field Work; henceforth counted</i> as part of 221 and 231	1956-57
ENGINEERING 310, 320, 330, 350, 360, 370, 380	1957-58

(Details from the Registrar.)

ENGLISH LANGUAGE AND LITERATURE

<i>Professor; Chairman of the Department, 1959-60</i>	Munro Beattie, A.M., Ph.D.
<i>Associate Professors</i>	G. B. Johnston, M.A. R. L. McDougall, M.A., Ph.D.
<i>Assistant Professors</i>	G. J. Wood, M.A. Michael Hornyansky, M.A.
<i>Sessional Lecturers</i>	W. A. Plumstead, M.A., Jennifer Arcand, M.A.
<i>Instructors</i>	Ruth M. Underhill, M.A. Mary Anne Phillips, M.A. Violet E. Moyer, B.A. Gretl Fischer, B.A.

Every student who elects English as his major subject will plan his program in conference with a representative of the department. The required courses in English are as follows:

in the second year, English 200;

in the third and fourth years, *six* of these courses: English 320, 323, 325, 330, 340, 342, 345, 350, 352, and 355.

ENGLISH 311 is obligatory in the final year.

HONOURS IN ENGLISH: An honours student will plan his program in conference with the chairman of the department. The curriculum for honours in English comprises a number of courses which are restricted to honours students, and certain others which are open to both pass and honours students in which additional work will be expected of the latter. At least twelve courses in English will be required (including both full and half courses), and at least six courses in other subjects. These subjects should include history, philosophy, and a language other than English; in any subject selected, more than one course should be taken.

Before graduation the student must take three English language courses and acquire a reading knowledge of Old and Middle English literature.

ENGLISH 311 is an obligatory course of the final year.

For superior students, provision may be made in the final year for independent study in a field of concentration of the student's own choice, such as the following: the novel, comparative literature, criticism, Old and Middle English, Canadian history and culture.

At the end of the final year the candidate for an honours degree in English language and literature must show satisfactory performance in a written comprehensive examination. A list of the authors and texts in which he is to be examined may be obtained from the chairman of the department.

(For information regarding preparation for admission to the Ontario College of Education for the Interim High School Assistant's Certificate, Type A, students are invited to consult the Registrar.)

The objectives for students who elect English as their major or honours subject are as follows:

1. to become acquainted with the chief works of the principal authors;
2. to understand the main developments in language, theme, and genre;
3. to acquire standards of literary judgment, appreciation, and expression.

In special circumstances, a student may fulfill these requirements in part by individual reading, assigned, supervised, and tested by the Department of English.

ENGLISH 111. *Composition and Grammar*

A course designed specifically for students who need to improve their use of written English. The course is conducted by means of a weekly class, regular writing assignments and exercises, and individual conferences with the instructor. A student whose attendance and work are irregular may be denied permission to write the final examination. (Half course).

Day Division: Annually (class one hour a week, practice period one or more hours a week).

Evening Division: Not offered 1959-60.

ENGLISH 120. *Literature and Composition*

The course comprises two parts: (a) the study of selected plays, poems, short stories, essays, and a novel; (b) a systematic study of the art of writing English prose. Neither part may be taken separately, unless, in rare cases, with the permission of the department. A student whose attendance and work are irregular in either part of the course may be denied permission to write the final examination.

Day Division: Annually (classes four hours a week, practice period one or more hours a week).

Professor McDougall, Mrs. Underhill, and Mrs. Phillips

Evening Division: Not offered 1959-60.

ENGLISH 200. *Literary Studies*

A course intended primarily for students who elect English Language and Literature as their major or honours subject.

A variety of texts will be read, with a view to an understanding of critical procedures and principles. Considerable attention will be given to bibliography, literary history, genres, prosody, and methods of analysis.

The course will be conducted in two or three lecture classes a week and in small tutorial groups.

PREREQUISITE: English 120 or equivalent.

Day Division: Annually (lectures three hours a week, group discussion one hour a week).

Professor Beattie and members of the Department

ENGLISH 210.[2]. *English Authors from Chaucer to T. S. Eliot*

A study of selected masterpieces in English literature from the fourteenth to the twentieth century—a course for students who do not elect English as a major subject. Essay-writing and regular participation in discussion groups are required.

TEXTS:

C. W. Dunn (ed.), *A Chaucer Reader*; Shakespeare, *Antony and Cleopatra*; Milton, *Paradise Lost*; Swift, *Gulliver's Travels*; Pope, *Selected Poems* (Penguin); Austen, *Emma*; Wordsworth *The Prelude and Selected Poems* (Rinehart); Dickens, *Great Expectations*; Twain, *Huckleberry Finn*; Shaw, *Caesar and Cleopatra*; T. S. Eliot, *Selected Poems* (Faber); Leacock, *Sunshine Sketches of a Little Town*; E. J. Pratt, *Ten Selected Poems*.

PREREQUISITE: English 120 or equivalent.

Day Division: Annually (lectures three hours a week, group discussion one hour a week).

Professor Hornyansky, Miss Moyer, and Mrs. Fischer

Evening Division: Not offered 1959-60.

ENGLISH 230. [12]. *English for Engineering Students*

A course in literature and composition for first-year Engineering students.

TEXT: Sypherd, Fountain, and Gibbens, *Manual of Technical Writing*.

Day Division: Annually (lectures two hours a week).

Professor Wood

ENGLISH 305.[S1]. *Classics of the Western Tradition*

Reading, in English translation, of passages from *The Iliad* and *The Odyssey*: Agamemnon, Oedipus Rex, Hippolytus, Phaedra (Seneca), Phèdre; *The Aeneid*; *The Divine Comedy*. (Half course). (This course is also listed as Classical Civilization 305.)

PREREQUISITE: By permission of the Department.

Not offered 1959-60.

ENGLISH 310.[8b]. *Old English*

A study of Old English language and literature including grammar and phonology, and translation of selections of Old English prose and poetry.

TEXTS: Sweet, *Anglo-Saxon Reader* (13th ed.); Quirk and Wrenn, *An Old English Grammar*.

PREREQUISITE: For honours students.

Day Division: 1959-60 (tutorials, two hours a week, *both* terms).

Professor Johnston

ENGLISH 311. *History of the English Language.*

A course for honours English students and English majors, to be taken in the final year. A departmental requirement which carries no university credit.

Evening Division: Annually (lecture one hour a week, *both* terms).

Professor Johnston

ENGLISH 312. *Old English Poetry*

Translation and study of the text of *Beowulf* and the *Finnsburg Fragment*.

PREREQUISITE: English 310, or permission of the instructor.

Day Division: 1959-60 (tutorials two hours a week, *both* terms).

Professor Johnston

ENGLISH 315.[9]. *Middle English*

A study of the English language and literature between the Norman Conquest and the fifteenth century. Special attention is given to fourteenth-century literature exclusive of Chaucer. Dickins and Wilson, *Early Middle English Texts*; Sisam, *Fourteenth Century Verse and Prose*; Sir Gawain and the Green Knight, ed. Tolkien and Gordon; Piers Plowman, *Passus* I-VII, ed. Skeat; readings in *The Works of Sir Thomas Malory*, ed. Vinaver.

PREREQUISITE: For honours students.

Day Division: 1959-60 (lectures two hours a week, *both* terms).

Professor Johnston

ENGLISH 317.[S2]. *Chaucer*

Completion of the study of Chaucer's works begun in English 320. (Half course).

TEXT: F. N. Robinson (ed.), *Chaucer's Complete Works*.

PREREQUISITE: For honours students; others by permission of the Department.

Day Division: 1959-60 (seminar two hours a week, *second* term).

Professor Johnston

ENGLISH 320.[4]. *Chaucer, Spenser, and Milton*

TEXTS: F. N. Robinson (ed.), *Chaucer's Complete Works*

Smith and De Selincourt (ed.), *The Poetical Works of Edmund Spenser*

Hughes (ed.), *John Milton, Complete Poems and Major Prose*.

PREREQUISITE: English 200, 210, 220, or equivalent.

Day Division: 1959-60 (lectures two hours a week).

Professors Johnston and Wood

ENGLISH 322.[S5]. *Spenser and Milton*

Special consideration of *The Faerie Queene* and *Paradise Lost*. (Half course).

TEXTS: Spenser, *Poetical Works* (Oxford)

Hughes (ed.), *John Milton, Complete Poems and Major Prose*.

PREREQUISITE: For honours students; others by permission of the Department.

Day Division: 1959-60 (concurrent with English 320, second term).

Professor Wood

ENGLISH 323.[220]. *Renaissance Prose and Poetry*

An intensive examination of the origins and development of the English Renaissance. (1500 - 1660).

TEXTS: Lamson and Smith (ed.), *Renaissance England*; texts by individual authors, to be announced.

PREREQUISITE: English 200 or equivalent.

Day Division: 1959-60 (lectures three hours a week).

Professor Wood

ENGLISH 324.[S6]. *Drama in England until 1642*

Study of the development of dramatic production and literature from the middle ages to the closing of the theatres in 1642. Reading of representative plays. (Half course.)

PREREQUISITE: By permission of the Department.

Not offered 1959-60.

ENGLISH 325. *English Drama to 1642 (with emphasis on Shakespeare)*

A study of the mediaeval origins of English drama; miracle and morality plays; the drama and stage of the English Renaissance, to the closing of the theatres in 1642.

TEXTS: To be announced.

PREREQUISITES: English 200, 210, or 220.

Evening Division: 1959-60 (lecture two hours a week, both terms).

Professor Wood

ENGLISH 326.[6]. *Life and Works of Shakespeare*

A study of the mediaeval origins of English drama, its development to and through the sixteenth and early seventeenth centuries, a survey of theatrical conditions of the Elizabethan period; intensive study of Shakespeare's environment and development as a dramatist, with careful reading of certain plays.

PREREQUISITE: English 200 or 210.

Not offered 1959-60.

ENGLISH 328.[16]. *Shakespeare and Milton*

Not offered 1959-60.

ENGLISH 330.[15a and 15b]. *Eighteenth Century Prose and Poetry*

The poetry and prose of the Neo-classic age with particular consideration of the works of Dryden, Pope, Swift, and Johnson; the creation of a standard prose-style; the decline of Neo-classicism; the novel.

PREREQUISITE: English 200, 210 or 220.

Evening Division: 1959-60 (lecture two hours a week, both terms discussion group one hour a week).

Professor Beattie

ENGLISH 332. *Restoration and Eighteenth Century Drama*

PREREQUISITE: For honours students.

(Offered as a reading course, Summer 1959).

Professor Beattie

ENGLISH 340. *Nineteenth Century Literature*

The major Romantic and Victorian poets from Wordsworth to Swinburne. Contemporary prose by Wordsworth, Coleridge, Carlyle, Newman, Mill, Arnold, Butler. Representative novels: Austen, *Sense and Sensibility*, *Emma*; Bronte, *Wuthering Heights*; Dickens, *Bleak House*; Thackeray, *Vanity Fair*; Eliot, *Middlemarch*; Hardy, *The Mayor of Casterbridge*.

PREREQUISITES: English 200, 210, or 220.

Evening Division: 1959-60 (lectures two hours a week, *first* term, three hours a week, *second* term).

Professor Hornyansky

ENGLISH 342.[S9]. *Nineteenth Century Thought*

Readings in the major prose works of the Romantic and Victorian periods.

TEXTS:

Burke, *On the Sublime*, *An Appeal from the New to the Old Whigs*, *Reflections on the French Revolution*; Wordsworth, *Preface to Lyrical Ballads* (1800); Coleridge, selections from *Biographia Literaria*, *Shakespeare Lectures* (selections); Carlyle, *Past and Present*, *On Heroes and Hero-Worship*, *Sartor Resartus*; Mill, *Autobiography*, *Liberty*, *Utilitarianism*; Newman, *Apologia pro Vita Sua*, *The Idea of a University*; Ruskin, selections; Morris, *News from Nowhere*; Butler, *Erewhon*; Arnold, *Culture and Anarchy*; Pater, *The Renaissance*; Wilde, selections.

PREREQUISITE: For honours students; others by permission of the instructor.

Day Division: 1959-60 (seminar one hour a week, *both* terms).

Professor Hornyansky

ENGLISH 345.[7]. *American and Canadian Literature*

A study of important stages in the development of the literatures of the United States and Canada, from colonial times to the present day, to provide the basis for an exploration of fundamental similarities and differences between the literary cultures of the two countries.

TEXTS:

Representative selections in prose and poetry from *The American Tradition in Literature* (eds. Bradley, Beatty and Long, 2 vols.) and *Canadian Anthology* (eds. Klinck and Watters). To supplement these anthologies, the student will be required to read the following texts: Hawthorne, *The Scarlet Letter*; Henry James, *The American*; Sinclair Lewis, *Babbitt*; Dos Passos, *U.S.A.*; T. C. Haliburton, *The Clockmaker*; Mackenzie's *Own Narrative of the Rebellion* (ed. Wallace); Susanna Moodie, *Life in the Clearings*; Pope, *Confederation Documents*; F. P. Grove, *A Search for America*; Report of the Royal Commission on . . . the Arts, Letters, and Sciences.

PREREQUISITES: English 200 or 210 or permission of the Department.

Evening Division: 1959-60 (lecture two hours a week).

Professor McDougall

ENGLISH 348.[S12]. *Canadian Poetry Since Confederation*

A survey of the chief developments in British, American, and Canadian poetry in the past seventy-five years.

A careful reading of the principal Canadian poets.

Not offered 1959-60.

ENGLISH 349. *The Canadian Novel Since 1900.*

A brief survey of the beginnings of the Canadian novel in the nineteenth century will be followed by a critical examination of twentieth-century works.

TEXTS:

Not offered 1959-60.

ENGLISH 350. [3]. *Major Twentieth-Century Authors*

A survey of themes, forms, and literary relationships since 1885.

TEXTS:

Oscar Williams (ed.), *A Little Treasury of Modern Poetry*; Butler, *The Way of All Flesh*; Wilde, *The Picture of Dorian Grey*, *Salome*, *The Importance of Being Earnest*; Shaw, *Mrs. Warren's Profession*, *Man and Superman*, *Major Barbara*; Synge, *The Playboy of the Western World*; O'Casey, *Juno and the Paycock*; T. S. Eliot, *Murder in the Cathedral*; Conrad, *Heart of Darkness*; E. M. Forster, *A Passage to India*; Bennett, *The Old Wives' Tale*; Joyce, *A Portrait of the Artist as a Young Man*; Lawrence, *Sons and Lovers*; Woolf, *To the Lighthouse*; Aldous Huxley, *Point Counter Point*.

Not offered 1959-60.

ENGLISH 352. [S3]. *Contemporary Texts*

A detailed and analytic study of several difficult twentieth-century works, notably *Ulysses*, *The Waste Land*, *Four Quartets*, and poems by W. H. Auden and Dylan Thomas.

PREREQUISITE: English 210, 220, or permission of the instructor.

Day and Evening Division: 1959-60 (seminar two hours a week, *both* terms).

Professor Beattie

ENGLISH 355. [17]. *The English Novel*

The development of the art of fiction in English literature, from its beginnings in the eighteenth century, through the major Victorian novelists, to the chief authors of the twentieth century.

Not offered 1959-60.

ENGLISH 360. [S7]. *Literary Criticism from Aristotle to the Present*
(Half course.)

TEXT: N. J. Bate, *Criticism: the Major Texts*.

PREREQUISITE: Honours students; others by permission of the Department.

Day and Evening Division: 1959-60 (seminar two hours a week, *both* terms).

Professor McDougall

ENGLISH 365. *Writing Seminar*

A non-credit seminar in writing, involving regular assignments in various genres, and practical criticism based on this work. Whether the course is offered in a given year, and whether it concentrates on prose or verse, will depend upon the enrolment.

PREREQUISITE: Permission of the instructor.

Day and Evening Division: Seminar one hour a week.

Professor Hornyansky

GRADUATE COURSES

The Department of English will, where it is possible, provide programs of studies leading to the degree of Master of Arts in English Language and Literature. Such programs will be planned with regard both to each candidate's special requirements and to the library facilities available.

Below are listed the general areas within which specific courses may be arranged:

ENGLISH 500. *Conference and Thesis Supervision*

Members of the Department

ENGLISH 510. *Old and Middle English*

Professor Johnston

ENGLISH 520. *The Literature and Culture of the Renaissance*

Professor Wood

ENGLISH 530. *Eighteenth Century Literature*

To be appointed

ENGLISH 540. *Nineteenth Century Literature*

Professor Hornyansky

ENGLISH 550. *Twentieth Century Literature*

Professor Beattie

ENGLISH 560. *American and Commonwealth Literature*

(See also the announcement of the Institute of Canadian Studies, p. 90).

Professor McDougall

*Discontinued Courses**Last offered*

ENGLISH 11. <i>First-year College Literature</i>	1948-49
ENGLISH 13. <i>English for Commerce Students (Half Course)</i>	1949-50
ENGLISH 110. <i>English Composition</i>	1956-57
ENGLISH 220. <i>Renaissance Prose and Poetry</i>	1957-58
ENGLISH 334. <i>The Novel in the Eighteenth Century</i>	1957-58
ENGLISH 235. <i>Public Speaking for Engineering Students</i>	1956-57
ENGLISH 344. <i>The Novel in the Nineteenth Century</i>	1958-59
ENGLISH 354. <i>The Novel in the Twentieth Century</i>	1958-59
ENGLISH 370. <i>Introduction to Honours in English</i>	1957-58

FINE ARTS

<i>Sessional Lecturer (Art)</i>	J. K. B. Robertson, M.A.
<i>Sessional Lecturers (Music)</i>	Carman H. Milligan, Mus.Bac., M.Mus. Frederick Karam, Mus.Doc., A.R.C.T.

Courses in the history of art are offered by Carleton University in co-operation with the National Gallery of Canada. The collections and study materials of the National Gallery afford the student unusual opportunities for direct observation. For courses available in 1959-60, consult office of the Dean.

ART

FINE ARTS 210.[1]. *An Introduction to Art History*

An introduction to the analysis of works of art, in the first term, followed, in the second, by a comparative survey of European architecture, sculpture and painting since prehistoric times.

FINE ARTS 305. *Classical and Mediaeval Art*

Architecture, sculpture, and painting of the Greeks and Romans to the fall of the Roman Empire, and European art from early Christian to Gothic times.

PREREQUISITE: Fine Arts 210 or permission of the instructor.

FINE ARTS 310.[3]. *Renaissance and Baroque Art*

European architecture, painting, and sculpture from the fifteenth to the eighteenth century.

PREREQUISITE: Fine Arts 210 or permission of the instructor.

FINE ARTS 325. *Modern Art*

European painting from 1800 to the present day, with reference also to sculpture and architecture, followed by a survey of Canadian art.

PREREQUISITE: Fine Arts 210 or permission of the instructor.

Discontinued Courses

Last offered

FINE ARTS 320.[5]. <i>Nineteenth and Twentieth Century Art</i>	1951-52
FINE ARTS 330.[2]. <i>The Art of North America</i>	1952-53
FINE ARTS 350.[4]. <i>Studio Course in Drawing and Painting</i>	1952-53

MUSIC

FINE ARTS 260.[Music 1]. *Introduction to Music*

A general survey of music history from 1400 to 1900 A.D. It will include preliminary studies in musical analysis, orchestral instruments, and score reading.

TEXT: Bernstein, *Introduction to Music*.

PREREQUISITE: Permission of the instructor.

FINE ARTS 365. *Music in the Middle Ages (to 1450);*

The Renaissance in Music (1450-1600).

The course will commence with a preliminary study of the music of the Greeks and Hebrews. Thereupon, in chronological sequence, the story of musical development will be studied in detail under the following headings: Plainchant; Organum; the origin of the motet and mass; Ars Nova; Dunstable; the Burgundians; the Flemish school; troubadors and trouveres. In the second term, the study will continue, leading to the Renaissance, and noting especially: Josquin; the Flemish chanson groups; Dutch and German organ composers; the Venetian and Roman Schools, including the Gabrieli; Palestrina.

PREREQUISITE: Permission of the instructor.

FINE ARTS 370. *Music in the Baroque Era (1600-1750);
The Classical Period in Music (1730-1827).*

The program of the course will commence with a study of the origin and development of opera as conceived by the Camerata in Florence and continued in Italy by Monteverde, Cavalli and Scarlatti; by Lully and Rameau in France; and by Henry Purcell in England. The great growth in Instrumental Music will also be explored, including the keyboard music of the French Clavecinists and the Italian, Domenico Scarlatti, the German Organ Composers and the Italian orchestra music of the early 1700's. The work of the semester will be culminated by an intensive study of the music of the two greatest composers of the period—Handel and Bach. The second semester will be given over primarily to the rise and growth of the Symphony and other cyclic forms. It will begin with the early symphonists of the Vienna and Mannheim Schools and will move on through the growing consciousness for thematic development as evidenced in the writing of K. P. E. Bach, Haydn, Mozart and Beethoven.

FINE ARTS 375. *Romanticism in Music (1827-1890);
Twentieth Century Music (1890-the present).*

Detailed study and analysis of romantic characteristics in music as evidenced in the music of Schubert, Weber, Mendelssohn, Chopin, Schumann, Brahms, Wagner, Tschai-kowsky.

Commencing with the French impressionists, music of our century will be examined with a view to enunciating some of the principles which seem to govern this new music.

TEXT: Bauer, *Music in the Twentieth Century*.

Discontinued Course

Last offered

FINE ARTS 360. [Music 2]. *Great Music of the 18th and 19th Centuries* . 1952-53

FRENCH

Visiting Professor Pierre Mélése, D. ès L.

Associate Professors J. S. Tassie, M.A., Ph.D.
(on leave of absence, 1959-60)

Assistant Professor; Chairman of the Department, 1959-60

C. P. Fleischauer, A.M., Ph.D.

Assistant Professors J. P. Young, B.A., D. ès L.

R. E. V. Bismuth, D. ès L.

Sessional Lecturer (to be appointed)

As Carleton University is situated in a bilingual community, students are encouraged to take advantage of the multiple opportunities for practical appreciation of the language. Radio, television, cinema, stage, the press, and everyday conversation are at hand to supplement academic course work. Class lectures are conducted in French as far as is feasible. The Department also expects soon to have at its disposal a fully equipped language laboratory.

PASS COURSE

Any student intending to major in French should consult the department as soon as possible, in any case *no later than the end of the second year*, to plan his program. This must be done with care in order to prepare the student for a comprehensive examination at the end of his final year.

HONOURS COURSE

Two honours programs are currently available. In both cases students will sit for a comprehensive examination at the end of their final year and will be expected to fulfill summer reading requirements.

Honours in English and French (preparation for admission to the Ontario College of Education for the Interim High School Assistant's certificate, Type A). This program normally requires twenty-two courses after Grade 13 and must be planned under the direct supervision of both the English and French Departments.

Honours in French. This program is designed for students intending to pursue graduate studies in the field of Romance languages. It normally consists of twenty courses after Grade 13, and will include the study of a second language other than English each year. Course selection in the major field will be made in order to assure a balanced appreciation of all periods of French literature, and competence in oral and written expression in the language.

In the Second Year the following courses will be chosen:

- English 210;
- Philosophy 210 or 220;
- History 220;
- French 220;
- a course in German (or Spanish or Russian or Latin*);
- a second-year course in science or mathematics**.

Senior courses will include:

- 8 or more additional course credits in French;
- 3 or more additional course credits in German (or Spanish or Russian or Latin);
- a further course (or courses) in: English, History, Philosophy, Classics or Psychology.

FRENCH 110. [1]. *Readings in Modern French*

The novel and short story by authors of the nineteenth and twentieth centuries. Grammar, translation, oral practice.

TEXTS: Parker, *French Practice Book* (Heath)

Galpin and Milligan, *Intermediate Readings in French* (Macmillan)

Day Division: Annually (lectures three hours a week).

Evening Division: Annually (two lectures a week).

Professor Fleischauer and others

FRENCH 220. *French Literature and Culture*

Brief but inclusive review of the development of French literature, with emphasis on reading and study of representative literary works of all types. Composition and oral practice.

TEXTS: Sonet and Shortliffe, *Standard French* (Harcourt Brace)

Sirich and Barton, *Harper's French Anthology*

Corneille, *Horace* (Cl. Larousse)

Molière, *Le Bourgeois Gentilhomme* (Cl. Larousse)

Racine, *Andromaque* (Cl. Larousse)

REFERENCE TEXT: Churchman and Young, *French Literature in Outline*.

PREREQUISITE: French 110.

Day Division: Annually. (lectures three hours a week).

Evening Division: Annually (two lectures a week).

Professor Young and others

*Latin 110 must be taken before graduation.

**Students are expected to take a science course before graduation. This requirement of the Second Year may be fulfilled in the Third Year.

FRENCH 301. *Le français oral*

Conversation, prononciation, intonation, phonétique. (Half course.)

TEXTS: *Nouveau Petit Larousse*

Grubbs and Lapp, *French Reviewed for Colleges* (Houghton Mifflin)

PREREQUISITE: French 220.

Not offered 1959-60.

FRENCH 302. *Composition et conversation*

Devoirs écrits. Exercices oraux. (Half course.)

TEXTS: *Nouveau Petit Larousse*

Whitmarsh, *Compete French Course* (Longmans Green)

PREREQUISITE: French 301 or permission of the Department.

Day Division: 1959-60 (two lectures a week).

Professor Bismuth

FRENCH 303. *Stylistique*

Problèmes de traduction et de syntaxe.

TEXTS: *Nouveau Petit Larousse*

Marouzeau, *Précis de stylistique française*

PREREQUISITE: French 302 or permission of the Department.

Not offered 1959-60.

FRENCH 305. *L'ancien français*

Les origines de la langue. Lecture d'anciens textes. La littérature du Moyen Age et de la Renaissance.

TEXTS: Bartsch, *Chrestomathie de l'ancien français*

Cons, *Anthologie littéraire de la Renaissance française*

PREREQUISITE: French 220 and Latin 110.

Day Division: 1959-60 (three lectures a week).

Professor Young

FRENCH 310. *La littérature et la pensée françaises du 17^e siècle*

La première génération des grands classiques; la deuxième génération. La querelle des Anciens et des Modernes.

TEXTS: Schinz and King, *Seventeenth Century French Readings*

Corneille, *La Mort de Pompée*

Racine, *Bérénice*.

Molière, *L'Ecole des femmes*

Madame de La Fayette, *La Princesse de Clèves*

REFERENCE TEXT: Lanson et Tuffrau, *Manuel d'histoire de la littérature française* (Heath)

PREREQUISITE: French 220.

Not offered 1959-60.

FRENCH 315. *La littérature et la pensée françaises du 18^e siècle*

Prolongement du classicisme. Les nouvelles idées politiques, sociales, religieuses, philosophiques.

TEXTS: Fellows and Torrey, *The Age of Enlightenment* (Crofts)

PREREQUISITE: French 220.

Not offered 1959-60.

FRENCH 317. *La littérature et la pensée françaises du 19^e siècle*

Romantisme, réalisme et symbolisme. Le roman, le théâtre, la poésie.

TEXTS: Guthrie and Diller, *French Literature and Thought since the Revolution*
 Borgerhoff, *Nineteenth Century French Drama*
 Galand and Cros, *Nineteenth Century French Poetry*

PREREQUISITE: French 220.

Evening Division: 1959-60 (two lectures a week).

Professor Mélése

FRENCH 320. [4]. *Littérature française contemporaine*

Du symbolisme et du naturalisme à nos jours. Etude détaillée d'un choix d'oeuvres parmi les grands écrivains représentatifs d'aujourd'hui.

REFERENCE TEXT: P. H. Simon, *Histoire de la littérature française au 20^e siècle*

PREREQUISITE: French 310 or 315 or permission of the Department.

Day Division: 1959-60 (three lectures a week).

Professor Bis.nuth

FRENCH 330. [5]. *Littérature canadienne de langue française*

Le roman et la poésie; le folklore, la presse. Etude de la littérature canadienne faite à la lumière des mouvements tant français qu'américains.

TEXTS: Laure Rièse, *L'Ame de la poésie canadienne française*
 Choix des romans importants depuis *Les Anciens Canadiens*

REFERENCE TEXT: S. Baillargeon, *Littérature canadienne française*

PREREQUISITE: French 310 or 315 or permission of the Department.

Not offered 1959-60.

FRENCH 345. *Histoire de la littérature française* (Half course)

TEXTS: Braunschvig, *Notre littérature étudiée dans les textes* (3 vols.)

G. Lanson, *Histoire de la littérature française*

PREREQUISITE: French 310 or 315 or permission of the Department.

Day Division: 1959-60 (two lectures a week).

Professor Mélése

FRENCH 346. *Histoire de la civilisation française* (Half course)

TEXTS: Seignobos, *Histoire sincère de la nation française*

Ledéserf and Smith, *La France*

PREREQUISITE: French 310 or 315 or permission of the Department.

Day Division: 1959-60 (one lecture a week).

Professor Mélése

FRENCH 360. *Le roman français*

Le développement du roman français depuis son inauguration jusqu'à nos jours. Les auteurs à étudier seront choisis dans la liste suivante: Honoré d'Urfé, Mme de La Fayette, Scarron, Lesage, Bernardin de Saint-Pierre, Rousseau, Voltaire, Balzac, Chateaubriand, Constant, Flaubert, Mérimée, Sand, Stendhal, Zola, Saint-Exupéry, Mauriac.

REFERENCE TEXT: Lanson et Tuffrau, *Manuel d'histoire de la littérature française* (Heath)

PREREQUISITE: French 310 or 315 or permission of Department.

Not offered 1959-60.

FRENCH 370. *Seminar on a topic of French literature*

Examination of a particular theme or area in French studies by directed readings and papers. Intended primarily for honours and graduate students.

FRENCH 380. *Tutorial*

Directed study, including essays, designed to fill special needs of individual students at the senior undergraduate or graduate level.

GRADUATE STUDIES

The Department will consider applications for study leading to the M.A. degree in fields for which adequate facilities are at hand. The courses listed below are currently available; the student may be directed, however, to select certain of these in combination with others, e.g., French 370 or French 380. Attention is also drawn to the general regulations found on pp. 87-88.

FRENCH 505. *Introduction to Romance philology*

A course designed to show the historical development of the French language and its relations with the other Romance languages.

FRENCH 520. *Le roman canadien de langue française*

Etude détaillée de quelques-uns des romanciers les plus importants du Canada français. Ce cours forme le complément du cours suivant (French 521) et du cours, "The Canadian Novel". (See p. 90.)

FRENCH 521. *La poésie canadienne de langue française*

Examen sérieux de l'oeuvre de quelques poètes parmi les plus importants du Canada français. Ce cours forme le complément naturel du cours précédent (French 520) et du cours "Canadian Poetry". (See p. 90.)

FRENCH 540. *Penseurs et réformateurs du 18^e siècle français*

Montesquieu et le relativisme, les idées de Voltaire sur la tolérance et la liberté, Diderot et le matérialisme, Rousseau théoricien de la politique et de la pédagogie.

*Discontinued Courses**Last offered*FRENCH 3. *La littérature et la pensée françaises des 17^e et 18^e siècles* . . . 1951-52FRENCH 210. [2]. *Nineteenth Century French Literature* 1955-56FRENCH 340 [6]. *Les maîtres de la littérature française* 1954-55

GEOGRAPHY

Associate Professor; Chairman of the Department, 1959-60 . . . G. C. Merrill,
M.A., Ph.D.

Sessional Lecturers Burton F. Kelso, M.A.
Peter J. Williams, M.A.

EARTH SCIENCE 200: *See Geology.*

GEOGRAPHY 212. *Physical Geography*

Climatology; oceanography; genetic study of surface features of the earth as developed under different climatic regimes.

TEXT: To be announced.

REFERENCE TEXTS: To be announced.

Day and Evening Division: (lectures two hours a week, laboratory two hours a week, three full day field excursions after final examination) *second term, 1959-60.*

GEOGRAPHY 310. *Principles of Geomorphology*

Slope formation, river and glacial erosion, under changing conditions. A critical analysis of various theories of the erosion cycle. A study of the Quaternary period in northern lands. Emphasis will be laid on geomorphological processes, especially in relation to recent advances in geotechnical fields.

TEXT: Thornbury, *Principles of Geomorphology.*

REFERENCE TEXT: Flint, *Glacial and Pleistocene Geology.*

PREREQUISITE: Geography 210 or Geology 210.

Evening Division: 1959-60 (lectures two hours a week, *both* terms, laboratory 2 hours a week during *second term*, two field excursions).

Mr. Williams

GEOGRAPHY 315. *North America*

This course outlines the physical, historical, and economic geography of North America as a whole. Principal regions of the continent are dealt with in detail.

REFERENCE TEXTS: Alfred J. Wright, *United States and Canada*, 2nd edition.
Miller, Parkins, and Hudgins, *Geography of North America*, 3rd edition.

PREREQUISITE: Geography 210, or permission of instructor.

Evening Division: 1959-60 (lectures and discussion three hours a week).
Mr. Kelso

GEOGRAPHY 325. *Cartography*

The study and construction of the major map projections; the fundamentals of lettering and map layout; the construction of special purpose maps, such as land use, population, production, etc.

TEXT: Robinson, *Elements of Cartography*.

PREREQUISITE: Permission of the instructor.

Day Division: 1959-60 (lecture one hour a week, laboratory four hours a week).

Professor Merrill

GEOGRAPHY 335. *Historical Geography*

A study is made of the relation of man, habitat, and economy of past eras. The role of man as an ecologic dominant is stressed. The geographic setting of the past is reconstructed for a number of societies.

REFERENCE TEXTS: Ralph E. Brown, *Historical Geography of the United States*.
C. L. and E. H. Lord, *Historical Atlas of the United States*.

PREREQUISITES: Geography 210, or permission of the instructor.

Day Division: 1959-60 (lectures and discussion three hours a week)

Professor Merrill

Discontinued Courses

	Last offered
GEOGRAPHY 210. <i>General Geography</i>	1958-59
GEOGRAPHY 350. <i>Economic Geography</i>	1957-58

GEOLOGY

Professor; Chairman of the Department, 1959-60	J. E. Riddell, B.Eng., M.Sc., Ph.D., F.R.S.C., F.G.S.A., F.G.A.C.
Assistant Professor; Curator	P. A. Hill, B.Sc., Ph.D., F.G.S., F.P.S., F.R.G.S.
Assistant Professor	W. L. Young, M.Sc., Ph.D.
Lecturers	K. Hooper, B.Sc., M.Sc., F.G.S. W. Tupper, M.Sc.
Special Lecturer	F. J. Alcock, B.A., Ph.D., F.R.S.C., F.G.S.A.
Sessional Lecturers	R. W. Boyle, Ph.D., F.R.S.C., F. H. McLearn, B.E., Ph.D., F.R.S.C., F.G.S.A., L. W. Morley, M.A., Ph.D., B. R. Pelletier, M.Sc., Ph.D.

DEPARTMENT OF GEOLOGY

The physical proximity of Carleton University to libraries, research offices, and laboratories of Federal Government agencies such as the Geological Survey of Canada, the Dominion Observatory, the Mines Branch, and the National Research Council, enables undergraduate and graduate students in the Geological Sciences to

make close contact with leading workers in the fields of Geology, Geochemistry, and Geophysics. Lectures by visiting scientists and meetings of various technical groups are open to staff and students of the University.

This opportunity of meeting and conferring with specialists in a variety of scientific disciplines is of particular benefit to graduate students.

PASS COURSE

Students intending to major in Geology must satisfy the requirements of the 1st and 2nd years of the general B.Sc. program. Geology 210 may be taken in first or second year. The normal pattern of courses is Geology 210, 311, 320, 330, 350, 362, 372, 391. In third year, majors must take Survey I or Engineering 231 as a prerequisite to Geology 372.

Minor subjects should be Chemistry, Mathematics, Physics or one of the Biological Sciences. The following subjects are required: Mathematics 200 or 211, Chemistry 210, Physics 200 or 205, and *one* of Biology 200, Botany 210 or Zoology 205. Mathematics 200 and Physics 200 may be taken only by students electing to minor in the Biological Sciences.

HONOURS COURSE

Honours requirements are:

- 1) At least twelve courses in Geology.
- 2) Mathematics 211, and at least one advanced course in Mathematics .
- 3) A total of six or seven courses in Physical or Natural sciences other than Geology, of which four must be in one field.
- 4) Three non-Science, non-Mathematics courses including one language other than English.
- 5) A geological report on one summer's work to be submitted during, or before, the fifth year.
- 6) A comprehensive oral examination at the end of the fifth year.

Selection of the Honours pattern must be made only after consultation with members of the Department.

GRADUATE STUDIES

The Department offers instruction, leading to the degree of Master of Science, in all main fields of the Geological Sciences. Candidates will be required to:

- (a) take all undergraduate courses necessary to provide a suitable academic background for advanced studies,
- (b) take three graduate courses selected by the Department,
- (c) prepare a thesis based on the candidate's own research,
- (d) take a comprehensive examination,
- (e) spend at least one year in full time study and research at the University.

Candidates who do not complete the M.Sc. requirements in one year may register for subsequent years as part-time students.

The Department also offers instruction leading to the degree of Doctor of Philosophy in certain fields of Geology and Geochemistry. Details may be obtained from the Chairman.

The general regulations governing the program for the degree of Doctor of Philosophy are set out on pp. 84-85 of this Calendar.

EXPLANATION OF COURSE NUMBERS (GEOLOGY)

In the following listing, full courses end in '0', half courses (first term) in '1', and half courses (second term) in '2'.

EARTH SCIENCE 200.

This course consists of the first term of Geology 210, followed by Geography 212. Offered in Arts Program only.

GEOLOGY 210. [2]. *General Geology*

The Earth in space; evolution of the continents; rocks and minerals; mountain building and deformation; the cycle and agents of erosion; the history of life and the growth of geological ideas.

TEXTBOOKS: Longwell, Knopp and Flint, *Outlines of Geology*; Holmes, *Physical Geology*. Supplementary reading to be announced.

Day Division: Annually (lectures two hours a week, laboratory two hours a week, two half day field excursions *first term*, two full day field excursions after the final examinations).

Evening Division: 1959-60 (lectures two hours a week, laboratory two hours a week, two half day field excursions *first term*, two full day excursions after the final examinations). Also summer 1959: lectures five hours a week, laboratory four hours a week plus field excursions.

Professor Hill and Mr. Hooper

GEOLOGY 311. *Structural Geology*

A systematic study of rock structures, their origins and importance. Laboratory: practical problems. (Half course.)

TEXT: Billings, *Structural Geology*, 2nd edn.

REFERENCE TEXTS: To be announced.

PREREQUISITE: Geology 210.

Day Division: 1959-60 (lectures two hours a week, laboratory three hours a week. *First term*)

Professor Hill

GEOLOGY 312. *Geomorphology*

(Offered as Geography 310 Principles of Geomorphology. See Department of Geography). See notations there).

GEOLOGY 320. [4].

A systematic study of the structure, chemistry, and morphology of crystals; the physical and chemical properties, and recognition of 150 common minerals; and the more important mineral deposits. Laboratory work involves the megascopic examination of crystal models, crystals, minerals; and blowpipe analysis.

TEXT: *Dana's Textbook of Mineralogy*, Revised by William E. Ford, 4th Edition, 1932.

PREREQUISITE: Math 112, Chem. 210. May be taken concurrently.

Day Division: 1959-60 (lectures two hours a week, laboratory three hours a week).

Professor Young

GEOLOGY 321.[326]. *Nonmetallic Mineral Deposits*

Classification of mineral deposits. The economies and distribution of the nonmetallic minerals; the mineral fuels; structural materials; ceramics and refractories; industrial and chemical minerals; fertilizers and abrasives; gemstones; groundwater supplies. (Half course).

TEXT: Bateman, *Economic Mineral Deposits*.

REFERENCE TEXTS: Mudd, *Industrial Minerals and Rocks*; and others to be announced.

PREREQUISITES: Geology 311 (or equivalent) and Geology 320.

Day Division: 1959-60 (lectures, laboratories, and seminars five hours a week, first term).

Professor Young

GEOLOGY 322.[327]. *Metallic Mineral Deposits*

The genesis and occurrence of metallic deposits. Controls of mineral localization. Methods of mining and extraction. The precious metals. The nonferrous metals. Ferrous metals. Minor metals. (Half course.)

TEXT: Bateman, *Economic Mineral Deposits*

REFERENCE TEXTS: Lindgren, *Mineral Deposits*. Others to be announced.

PREREQUISITES: Geology 311 (or equivalent) and Geology 320.

Day Division: 1959-60 (lectures, laboratories and seminars five hours a week, second term).

Professor Young

GEOLOGY 330.[5]. *Palaeontology*

The principles of palaeontology; the classification of invertebrates, their morphology and evolutionary history with reference to the broader phases of palaeobotany and vertebrate evolution. An introduction to the use of invertebrates in stratigraphic interpretation.

TEXT: Moore, Lalicker and Fischer, *Invertebrate Fossils*

REFERENCE TEXTS: Shrock and Twenhofel, *Principles of Invertebrate Palaeontology*

Shimer, *An Introduction to the Study of Fossils*

PREREQUISITE: Geology 210, and Biology 200 or Zoology 205, or permission of the Department.

Day Division: 1959-60 (combined seminars and laboratory five hours a week).

Mr. Hooper

GEOLOGY 350.[355]. *Petrology*

An introduction to the optical properties of the simpler rock-forming minerals. The composition, origin and classification of the igneous, metamorphic and sedimentary rocks. Laboratory: megascopic and microscopic examination of rocks and their constituents.

TEXTS: Rogers and Kerr, *Optical Mineralogy*.

G. W. Tyrrel, *Principles of Petrology*.

REFERENCE TEXTS: Hatch and Wells, *Petrology of the Igneous Rocks*.

Turner and Verhoogen, *Igneous and Metamorphic Petrology*.

PREREQUISITE: Geology 320.

Day and Evening Division: 1959-60 (combined seminars and laboratory six hours a week).

Mr. Tupper

GEOLOGY 361.[340]. *Sedimentation*

Sedimentation patterns and trends. Heavy mineral preparation and study. Grade scales, statistical devices, size analyses. Directional properties of fabric, texture and lithofacies. Regional analyses of primary sedimentary structures. The stereonet. (Half course).

TEXT: To be announced.

REFERENCE TEXTS: To be announced.

PREREQUISITES: Geology 210, 350, and permission of the instructor.

Day and Evening Division: 1959-60 (combined seminars and laboratory five hours a week, *first term*).

Dr. Pelletier

GEOLOGY 362.[361]. *Stratigraphy*

Lithological classification and correlation; stratigraphic palaeontology; faunal correlation; restoration of the environment and interpretation of the stratigraphic record; tectonic framework. Emphasis on Cambrian to Recent. (Half course).

REFERENCE TEXTS: Dunbar & Rogers, *Principles of Stratigraphy*
Neaverson, *Stratigraphic Palaeontology*
Krumbein & Sloss, *Stratigraphy and Sedimentation*
LeRoy, *Subsurface Geological Methods*

PREREQUISITES: Geology 330 which may be taken concurrently.

Day Division: 1959-60 (lectures and laboratory five hours a week, *second term*).

Dr. McLearn

GEOLOGY 372.[371]. *Field Geology*

Techniques of geological mapping; the observation and interpretation of field data; the use of topographic maps and aerial photographs. Writing the geological report. (Half course)

PREREQUISITE: Geology 311; Engineering 231, or Surveying I, or equivalent.

TEXTS: Texts and supplementary reading to be announced.

Day Division: 1959-60 (combined seminars and laboratory two hours a week, *second term*; fifteen days field work in the Spring of 1959 — exact dates to be announced later).

Professor Young

GEOLOGY 381.[376] *Exploration Geophysics*

An introduction to the fundamental theory and application of geophysics to economic and structural geology. Laboratory work involves interpretation of geophysical and geological maps. Field work will introduce students to various geophysical instruments. (Half course).

TEXT: Nettleton, *Geophysical Prospecting for Oil*

REFERENCE TEXTS: To be announced.

PREREQUISITES: Physics 205, or permission of the instructor.

Day and Evening Division: 1959-60 (combined lectures, labs, or field trips, five hours a week, *first term*).

Dr. Morley

GEOLOGY 382.[375] *Applied Geochemistry*

An introductory nonmathematical course; the chemical and physical factors responsible for the distribution and migration of the elements in the lithosphere, hydrosphere, atmosphere, and biosphere; geochemistry applied to mineral exploration. Laboratory work involves determination of trace amounts of the common metallic elements in water, rock and soil. (Half course).

TEXT: Hawkes, *Principles of Geochemical Prospecting*

REFERENCE TEXTS: Mason, *Principles of Geochemistry*
 Rankama and Sahama, *Geochemistry*
 Goldschmidt, *Geochemistry*
 Sandell, *Colorimetric Determination of Traces of Metals*

PREREQUISITES: Geology 210, 320 (may be taken concurrently), Chemistry 210.

Day Division: 1959-60 (combined lectures and laboratory five hours a week, second term).

Professor Riddell

GEOLOGY 391.[380]. *Precambrian Geology*

An introduction to Precambrian terranes and mineral resources with emphasis on North America. (Half course).

TEXTS: Geology and Economic Minerals of Canada, 4th Edn.
 Others to be announced.

PREREQUISITES: Geology 311 and 320, Geology 350 (may be taken concurrently).

Day Division: 1959-60 (lectures 3 hours a week, assignments to be arranged, first term).

Professor Riddell

HONOURS COURSES

GEOLOGY 411. *Igneous and Metamorphic Petrology*

Classification of igneous rocks. Evolution and crystallization of magmas. Associations and petrographic provinces. Granitization. Metamorphism: chemical adjustment and mineralogic assemblages. Laboratory: study of selected suites, introduction to the universal stage. (Half course).

TEXTS: Turner & Verhoogen, *Igneous and Metamorphic Petrology*
 Harker, *Metamorphism*

REFERENCE TEXTS: To be announced.

PREREQUISITE: Geology 350.

Day Division: 1959-60 (seminars and laboratory five hours a week, first term).

Lecturer to be announced

GEOLOGY 412. *Sedimentary Petrology*

Composition, texture, structure and origin of the major sedimentary rock types. Environment, source, transport of sediments. Facies in relation to sedimentation and tectonics. Paleogeographic reconstruction. (Half course).

REFERENCE TEXTS: Pettijohn, *Sedimentary Rocks*
 Krumbein & Pettijohn, *Manual of Sedimentary Petrography*
 Shrock, *Sequence in Sedimentary Rocks*
 Krumbein & Sloss, *Stratigraphy and Sedimentation*

PREREQUISITES: Geology 350, 361.

Day and Evening Division: 1959-60 (combined seminars and laboratory five hours a week, second term).

Dr. Pelletier

GEOLOGY 422. *Mineralography*

The metallographic microscope. The study and recognition of opaque minerals. Micro-chemical tests. (Half course).

REFERENCE TEXTS: Short, *Microscopic Determination of the Ore Minerals*
Edwards, *Textures of the Ore Minerals*

PREREQUISITES: Geology 350 (which may be taken concurrently).

Day Division: 1959-60 (seminars and laboratory five hours a week, *second* term).

Lecturer to be announced

GEOLOGY 432. *Micropalaeontology*

Types of microfossils, their historical sequence and biostratigraphic significance. Micropalaeoecology. Local and regional correlation. Laboratory: preparation and examination of microfossils; the statistical treatment of morphological features in successive populations. (Half course).

REFERENCE TEXTS: Glaessner, *Principles of Micropalaeontology*
Jones, *Introduction to Micropalaeontology*
Cushman, *Foraminifera*

PREREQUISITES: Geology 330 and permission of instructor.

Day Division: 1959-60 (combined seminars and laboratory five hours a week, *second* term).

Mr. Hooper

GEOLOGY 441. *Selected Problems in Canadian Geology*

Interpretation and evaluation of outstanding problems in Geology. Term paper to be submitted.

TEXTS: Selected reading.

PREREQUISITES: Permission of the Department

Day and Evening Division: 1959-60 (seminars and laboratory four hours a week, *first* term).

Members of the Department

GEOLOGY 460. *Chemistry and Physics of the Earth*

Physical and chemical properties and characteristics of the earth. Inferred physico-chemical processes active throughout geologic time.

TEXTS: Reference texts and outside reading.

PREREQUISITES: Geology 411 (may be taken concurrently).

Day Division: 1959-60 (lectures three hours a week).

Members of the Department

GEOLOGY 471. *Instrumental Analysis*

An introduction to spectrographic and photometric analysis; colorimetry, chromatography, radiometric analysis, X-ray diffraction and fluorescence spectrometry. (Half course).

TEXTS: To be announced

REFERENCE TEXTS: To be announced

PREREQUISITES: Permission of the Department

Day Division: 1959-60.

Mr. Tupper

Discontinued Courses

Last offered

GEOLOGY 211.[2]. *General Geology* 1952-53

GEOLOGY 341. *Stratigraphy and Sedimentation* 1954-55

GEOLOGY 310.[3]. *Physiography and Structural Geology* 1956-57

GEOLOGY 325. *Economic Geology* 1956-57

GEOLOGY 370. *Field Geology* 1956-57

GEOLOGY 312. *Geology of Canada* 1957-58

GEOLOGY 323. *Optical Mineralogy* 1957-58

GERMAN

Assistant Professor; Chairman of the Department, 1959-60. E. M. Oppenheimer,
B.A., A.M., Ph.D.

Sessional Lecturers D. A. Camfield, M.A.
Carl Wolff, B.A.

Students electing German alone or in combination as their major subject should consult the department concerning their program.

An Honours program designed to prepare for admission to the Type A certificate course of the Ontario College of Education is being made available. Consultation with the Registrar and the department is invited.

The language laboratory facilities on the new campus will be used in German 115, 210, and 311.

GERMAN 115. *Elementary German*

An introduction to the essentials of German grammar and composition. Oral practice. Graded and original texts are used. Guidance in the reading of specialized texts is available.

Day Division: 1959-60 (four hours, including one laboratory period a week).

Evening Division: 1959-60 (four hours a week).

GERMAN 210. [2]. *Intermediate German*

Reading of representative texts (poetry, drama and prose fiction) from the 18th, 19th and 20th centuries. Composition and oral practice.

PREREQUISITE: German 115 or equivalent.

Day and Evening Divisions: 1959-60 (three lectures and one laboratory period a week).

GERMAN 311 [3]. *Advanced Composition; conversation*

Consolidation of active command of the language. Development of criteria for stylistic judgment.

PREREQUISITE: German 210 or equivalent.

Day or Evening Division: 1959-60 (three meetings a week).

GERMAN 315. *The Age of Goethe*

A survey of the major trends of the 1750-1830 period, Storm and Stress, Classicism, Romanticism with the work of Goethe as its focus.

PREREQUISITE: German 210 or equivalent.

Not offered 1959-60. Offered in 1960-61.

GERMAN 325. *German literature of the Twentieth Century*

Shorter selections for orientation and detailed treatment of major representative texts.

PREREQUISITE: German 210 or equivalent.

Day or Evening Division: 1959-60 (three lectures a week).

GREEK

(See Classics)

HISTORY

Professor	James A. Gibson, M.A., B.Litt., D.Phil.
Associate Professor; Chairman of the Department, 1959-60	David M. L. Farr, M.A., D.Phil.
Associate Professor	G. S. Couse, B.A.
Assistant Professors	S. R. Mealing, M.A., B. Litt.
	John S. Moir, M.A., Ph.D.
Instructor	D. G. Bowen, M.A.
Sessional Lecturers	Ronald Grantham, M.A.
	Lovell C. Clark, M.A.
Honorary Lecturer	J. M. McQueen, M.A.

Courses in the Department of History are designed in part to enable students to benefit from the unique and extensive resources which are available in the national capital. Students in Canadian and colonial history are encouraged to make use, for example, of the wealth of material found in the Public Archives of Canada; students in international relations and associated subjects, of the vast body of documentary information available from the Department of External Affairs and other departments of the Government of Canada, from the information offices of the foreign missions established in Canada, and from a variety of non-governmental and voluntary agencies which maintain national headquarters in Ottawa. The advantages of Ottawa as a centre for the study of Canadian, colonial and Commonwealth history are, indeed, indisputable, and the Department has sought to utilize these advantages in its instructional program.

PASS COURSE

Students majoring in History in the Pass Course are required to complete at least seven courses in History in their final three years of study. One of these courses must be History 220, taken in the second year; it is also recommended that History 230 be included in the work of the second year. The remaining courses in History, as well as those selected in other subjects, must be chosen in consultation with a member of the Department.

Students who wish to major (or to take Honours) in History will be expected to fulfill the summer reading requirements.

HONOURS COURSE

(For information regarding preparation for admission to the Ontario College of Education for the Interim High School Assistant's certificate, Type A, students are invited to consult the Registrar.)

History. The first year of the pass Arts course. The second year of the honours program in social sciences, or the second year of the pass Arts course, including History 220 in either case.

Additional courses bringing the total of credits beyond first year to at least 20, including those of the following which have *not* been taken in the second year:

1. At least 10 courses in History including: History 220, 230, 330, 340, 350, 388; History 320 *or* 322; History 396 (a dissertation) and two others.
2. At least four courses in a minor field (ordinarily in Economics, Geography or Political Science, but may be in English or another subject).
3. History 390, a seminar in historical method, which is a half course taken (ordinarily in the fourth year) for no credit.

Candidates will be required to show a proficient reading knowledge of a modern language other than English, preferably French or German.

At the end of the fifth year each candidate will present a dissertation, involving research into a problem of historical interpretation, in a fashion displaying competence in historical method. The subject for research will be settled in consultation with the Department, and a supervisor will be assigned. The candidate will be publicly examined upon his dissertation after presentation. This dissertation is listed in the calendar as History 396.

History and Political Science: Students intending to take this course should take History 220 or Political Science 210 (or preferably both) in the second year. The choice of courses in subsequent years will be subject to the approval of the chairmen of the two Departments. The honours requirements include at least eight courses in History and seven courses in Political Science. A dissertation (History 396 or Political Science 390) is optional. The course pattern will be arranged so that the student may transfer either to full honours in History or to full honours in Political Science at the end of the fourth year, if he then wishes to specialise more intensively.

GRADUATE STUDIES

The Department offers studies leading to the degree of Master of Arts in areas of history for which adequate documentary materials are available. The general regulations governing graduate studies will be found on pp. 84-5; in addition the following regulations of the Department should be noted.

The final year for the Master's degree in History will be composed of:

1. History 388 (The Philosophy of History)
If this course or its equivalent has been taken for an undergraduate degree, another course will be substituted.
2. History 590 (Historical Method — Graduate Studies)
3. A field of directed study: History 530 or 533.
4. History 596 (Thesis — Graduate Studies).

In addition a reading knowledge of a modern language other than English, preferably French or German, will be required.

HISTORY 110. [1]. *Main Directions in Modern History, 1870-1955*

This course will provide a survey of the forces which since 1870 have shaped the growth of European civilization. It will conclude with a consideration of the roots of the present world situation.

TEXT: Hayes, *Contemporary Europe Since 1870* (Macmillan).

Day Division: Annually (lectures and discussion three hours a week).

Evening Division: 1959-60 (lectures two hours a week, group discussions monthly).

Professors Farr and Moir; Mr. Grantham

HISTORY 220. [9]. *An Introduction to Western Civilization*

This course will seek to explain the present Western way of life, with its problems, as the outcome of a process of civilization. It is intended that the course will be prerequisite for all advanced courses in European and British history. (Although intended primarily for second-year students, this course may be taken for upper-year credit, in which case additional essays and reading will be required).

TEXT: To be announced.

PREREQUISITE: History 110 or the equivalent.

Day and Evening Division: Annually (lectures and discussion three hours a week).

Professors Couse and Moir

HISTORY 230. [3]. *History of North America in the Colonial Period*

An introduction to the history of Canada and the United States. The development of the Spanish, English, and French empires in North America will be described.

TEXTS: Nettels, *The Roots of American Civilization* (Appleton-Century-Crofts).

Canadian Historical Association Booklets, Nos. 3-6.

PREREQUISITE: History 110 or the equivalent.

Day Division: Annually (lectures and discussion three hours a week).

Professors Farr and Mealing

History 270. *Greece in the Ancient World*

(Offered in the Department of Classics as *Classical Civilization* 270. See notation there).

HISTORY 320. [4]. *History of Europe, 500-1450*

This course will deal with the history of Western Europe and its external relations in the Middle Ages.

PREREQUISITE: History 220.

Not offered 1959-60.

HISTORY 322. [6]. *History of Europe, 1450-1715*

The primary concern of this course will be to arrive at an accurate appreciation of the Renaissance and the Reformation.

PREREQUISITE: History 220.

Day Division: 1959-60 (lectures and discussion three hours a week).

Mr. Bowen

HISTORY 326. [14]. *History of Modern Europe, 1715-1919*

This course will be concerned primarily with the French Revolution and its aftermath in the general history of nineteenth-century Europe.

PREREQUISITE: History 220.

Not offered 1959-60.

HISTORY 330. [13]. *Canada from 1791: The Evolution of Canadian Self-Government*

This course will consider the constitutional evolution of Canada from representative to responsible government, and from federation to autonomy. Attention will also be given to the emergence of Canada into the world community.

RECOMMENDED FOR REFERENCE: Kennedy, *The Constitution of Canada* (Oxford).
Brebner, *North Atlantic Triangle* (Ryerson).

PREREQUISITE: History 230 or permission of the Department.

Day Division: Annually (lectures three hours a week).

Evening Division: Summer 1959 (lectures five hours a week).

Professor Mealing; Mr. Clark

HISTORY 340. [8]. *History of the United States of America*

This course will consider the history of the United States in the national period, emphasizing political and economic factors.

Not offered 1959-60.

HISTORY 343. [18]. *Canada-United States Relations*

This course will trace the development of Canadian-American relations from the end of the eighteenth century, with particular attention on the period since 1871.

PREREQUISITE: Permission of the Department.

Not offered 1959-60.

HISTORY 350. *British Constitutional History*

This course will survey the development of the British constitution from its Anglo-Saxon beginnings, with the emphasis on the period after 1660. Use will be made of documents.

PREREQUISITE: History 220 or permission of the Department.

Not offered 1959-60.

HISTORY 353.[10]. *English Social History*

This course is intended primarily to provide a background for the study of English literature. It will concentrate upon the non-political history of England.

PREREQUISITE: History 220 or permission of the Department.

Not offered 1959-60.

HISTORY 357. *The Tudors and Stuarts, 1485-1714*

This course will consider the major currents in sixteenth- and seventeenth-century British history, whether social, economic, political, religious, or intellectual.

PREREQUISITE: History 220 or permission of the Department.

Not offered 1959-60.

HISTORY 358. *British History from 1714*

The main emphasis of this course will fall on the nineteenth century, the major currents of which it will consider in their effect on Great Britain.

PREREQUISITE: History 220 or permission of the Department.

Day Division: 1959-60 (lectures and discussion three hours a week).

Professor Moir

HISTORY 360.[23]. *The Economic Development of Canada*

This course is designed as an advanced course in the economic history of Canada and will stress the influence of geography and the impact of ideas and institutions from other areas upon North American development. (The course is listed also as Economics 360).

RECOMMENDED FOR REFERENCE: Easterbrook and Aitken, *Canadian Economic History* (Macmillan)

PREREQUISITE: Economics 210 or History 230. (This course will ordinarily be open only to students in the third or higher years.)

Evening Division: 1959-60 (lectures and discussion three hours a week).

Professor Farr

HISTORY 370.[7]. *British Expansion Overseas and the British Empire*

This course will consider the development of the British Empire and Commonwealth from the American Revolution to the present day.

RECOMMENDED FOR REFERENCE: Burt, *The Evolution of the British Empire and Commonwealth from the American Revolution* (Heath).

PREREQUISITE: Permission of the Department.

Not offered 1959-60.

HISTORY 373.[17]. *The British Commonwealth of Nations*

This course will deal with the philosophy, structure, and development of the Commonwealth association under the Crown.

PREREQUISITE: Permission of the Department.

Not offered 1959-60.

HISTORY 380.[16]. *An Introduction to International Relations, 1919-1939*

The central theme of this course will be the attempt to establish a lasting peace after the First World War and the failure of that attempt. The course is designed primarily for upper-year students majoring in history, political science, public administration, economics, commerce and journalism.

RECOMMENDED FOR REFERENCE: Carr, *International Relations between the Two World Wars, 1919-1939* (Macmillan); Potter, *An Introduction to the Study of International Organization* (Appleton-Century); *Complete World Atlas* (Hammond, New York).

PREREQUISITE: Permission of the Department.

Day Division: 1959-60 (lectures and discussion three hours a week).

Professor Gibson

HISTORY 388.[25]. *The Philosophy of History*

This is a seminar in which major works in the philosophy of history will be examined in reference to such questions as the nature and importance of historical knowledge and the pattern of universal history.

PREREQUISITE: Permission of the Department. (This course ordinarily will be open only to students in the fourth and higher years, and preference will be given to students in honours courses in any department.)

Day Division: 1959-60 (lectures and discussion three hours a week).

Professors Couse and Mealing

HISTORY 390.[S1]. *Fourth-year Honours Seminar*

This seminar will discuss problems of historical method, including the sources of history, the essentials of historical research, historical criticism, the weighing of evidence, bias in historical recording, and the mechanics and vocabulary of historical writing with special emphasis on the preparation of historical papers.

Day Division: Annually (tutorial hours arranged, *both* terms).

Members of the Department

HISTORY 396.[35]. *Dissertation for Honours in History*

Candidates for honours in History will be required to present, at the end of their fifth year, a dissertation involving research into a problem of historical interpretation, and in a fashion displaying an adequate competence in historical method. The subject for research will be settled in consultation with the Department and a supervisor will be assigned. The candidate will be publicly examined upon his dissertation after presentation.

Day Division: Annually (tutorial hours arranged, *both* terms).

Members of the Department.

HISTORY 530. *British North America, 1783-1867*

A field of directed study in the history of the British North American colonies from 1783 to 1867. Consultations and assignments will be required, together with a written examination.

Day and Evening Divisions: Annually (tutorial hours arranged, *both* terms).

Members of the Department

HISTORY 533. *Canada, 1867-1945*

A field of directed study in the history of Canada after 1867. Consultations and assignments will be required, together with a written examination.

Day and Evening Divisions: Annually (tutorial hours arranged, *both* terms).

Members of the Department

HISTORY 590. *Historical Method — Graduate Studies*

This course will cover the same subjects as History 390, except that it will be directed towards the preparation of a graduate thesis in History.

Day and Evening Divisions: Annually (tutorial hours arranged, *both* terms).

Members of the Department

HISTORY 596. *Thesis — Graduate Studies*

A thesis, involving a substantial historical investigation, will be the principal requirement for the Master's degree in History. The subject will be settled in consultation with the Department and a supervisor will be assigned. The candidate will be publicly examined upon his thesis after presentation.

Day and Evening Divisions: Annually (tutorial hours arranged, *both* terms).

Members of the Department

*Discontinued Courses**Last offered*

HISTORY 2. <i>History of the United States and Canada since 1763</i>	1946-47
HISTORY 2. <i>History of Europe, 1400-1789</i>	1948-49
HISTORY 11. <i>North America and the Modern World</i>	1949-50
HISTORY 250. <i>An Introduction to English History</i>	1956-57
HISTORY 324. <i>History of Europe: Westphalia to Waterloo (1648-1815)</i> .	1949-50
HISTORY 355. [5]. <i>English History to 1689</i>	1951-52
HISTORY 356. [15]. <i>English History from 1689</i>	1950-51
HISTORY 383. [24]. <i>Modern Diplomatic History, 1878-1945</i>	1951-52

See also Economics 315, *Economic History*
 Geography 340, *Historical and Political Geography*
 Political Science 310, *Comparative Government*

ITALIANITALIAN 115. *Introduction to Italian*

A beginning course. Grammar, reading, and oral practice.

Not offered 1959-60.

ITALIAN 220. *Italian Literature*

A brief but inclusive review of Italian literature, with emphasis on reading and study of the important texts. Composition and oral practice.

Not offered 1959-60.

JOURNALISM

Professor and Director of the Department

Wilfrid Eggleston, M.B.E., B.A., F.A.G.S.

Assistant Professor W. H. Kesterton, B.A., B.J.

Sessional Lecturer Frances Oakes Baldwin, B.A., B.J.

Seminar Leaders W. B. Herbert, B.A., LL.B.
Tom Foley

Field Work Supervisors Eric Cawdron
Chester Frowde

Note: Journalism subjects may be taken only by candidates for the degree of Bachelor of Journalism.

JOURNALISM 210. *Preparatory Lectures for Second-year Journalism Students*

A series of meetings with members of the staff of the Department of Journalism will be arranged for the guidance of students enrolled in the second year of the Journalism course. Details as to dates, themes, and instructors will be supplied to students by mail. Second-year Journalism students will be expected to attend these sessions, but the lectures yield no academic credit and no tuition fee is charged for them.

Day Division: Annually (lectures arranged).

Professors Eggleston and Kesterton

JOURNALISM 310. [1]. *Introduction to Journalism*

A broad survey of the whole field. Discussion of free lance writing, with practical exercises in the magazine article, newspaper feature, dramatic script, and the short story. Marketing. Personal qualifications and opportunities. The main trends in the journalism of Canada from 1752 to the present will be examined, and important publications and representative journalists of the period considered. Some account of the press of other countries also will be given.

RECOMMENDED READING: Wolseley and Campbell, *Exploring Journalism* (Prentice-Hall).

Day Division: Annually (lectures and practical exercises, four hours a week).

Professors Eggleston and Kesterton; and Mrs. Baldwin

JOURNALISM 320. [2]. *Fundamentals of Reporting*

The nature of news values; how to recognize and collect news; how to analyse, organize and report it. Interviewing and news gathering. This is mainly a practical course, based on assignments in reporting and other forms of writing.

RECOMMENDED READING: Neal, *News Gathering and News Writing* (Prentice-Hall).

Day Division: Annually (lectures and practical exercises, four hours a week; group discussions).

Professors Eggleston and Kesterton

JOURNALISM 330. [3]. *Editing*

Copy-reading and head-writing. This course will provide practical instruction in the duties and responsibilities of the deskman, and training in reading copy and writing headlines. The responsibilities and opportunities of the editor in his community will be discussed; the press and society; semantics; the ethics of journalism; freedom of the press; the law and the press; censorship in war and peace; news policy; the sources and interpretation of foreign news; layout; the use of illustrations.

TEXT: Bastian, Case, and Baskette, *Editing the Day's News* (Macmillan).

PREREQUISITE: Journalism 310.

Day Division: Annually (lectures three hours a week).

Professor Eggleston

JOURNALISM 340.[4]. *Interpretative Reporting*

Coverage of governmental activities and other specialized fields such as business, music, drama, the film, politics, the popularization of science, the column; the book review. Development of sources and contacts. Writing for the ear in the radio newscast, the radio talk and commentary. This is mainly a practical course based on assignments, and includes field work on a daily newspaper and a radio station. Methods of research; filing; work in newspaper library and morgue.

TEXT: MacDougall, *Interpretative Reporting* (Macmillan).

PREREQUISITE: Journalism 320.

Day Division: Annually (lectures and practical exercises averaging four or five hours a week).

Professor Eggleston

JOURNALISM 350.[5]. *Career Seminar in Journalism*

Round table discussions with guest speakers. Each student in Journalism 350 will be required to choose a current topic of Canadian interest for extensive live research and study as preparation for an oral report, which will be followed by questioning from instructor and group. Vocational guidance. Groups will be arranged whenever possible to meet the needs of those who have special interests or ambitions.

PREREQUISITE: For final year Journalism students.

Day Division: Annually (round table sessions, two hours a week, plus special seminars).

Members of the Department

MATHEMATICS

Professor, Chairman of the Department, 1959-60

M. S. Macphail, M.A., D.Phil., F.R.S.C.

Associate Professor F. H. Northover, M.A., Ph.D.

Assistant Professors R. J. Semple, M.A., Ph.D.

A. H. Lightstone, M.A., Ph.D.

Lecturers H. Treffner, B.Sc.

R. B. Gamble, B.Sc.

Sessional Lecturers J.D. K. Dale, B.A.

R. L. Beatty, B.A.; Mavis Brown, B.A.; J. C. Gardner, B.A., M.Ed.; Frances

Hobson, M.A.; L. W. Rentner, B.A.; P. Robinson, Ph.D.; A. R. Veall, B.A.; A.

J. Wickens, M.Sc.

PASS COURSE

Pass students must take Mathematics 211, 305, 310, and at least two additional full courses (or the equivalent in half courses), chosen with the approval of the Mathematics Department. A grade of C or better is required in at least half of the Mathematics courses.

HONOURS COURSE

(For information regarding preparation for admissions to the Ontario College of Education for the Interim High School Assistants' certificate, Type A, students are invited to consult the Registrar.)

Basic requirements—The first and second years of the pass arts or science course.

Honours requirements—At least 15 courses beyond second year—those of the following which have *not* been taken in the second year:

1. Ten courses in Mathematics, including: Mathematics 211, 305, 310, 320, 391. Five courses in Physics, or such other minor as may be approved by the Mathematics Department.

2. All courses are chosen subject to the approval of the Department.
3. The candidate must demonstrate a reading knowledge of one of French, German, or Russian.
4. There will be a comprehensive examination at the end of each of the fourth and fifth years.

MATHEMATICS 110 [1]. *Algebra*

Ratio, proportion, variation, theory of quadratics solution of equations, the progressions, interest and annuities, the function, permutations and combinations, binomial theorem. (Half course.)*

TEXT: Petrie, Baker, Levitt, and MacLean, *Algebra*

Day Division: Annually (lectures two hours a week, *both* terms).

Evening Division: Annually (lectures two hours a week, *both* terms). Also Summer 1959 (lectures 2½ hours a week).

Mr. Gamble and Mr. Rentner

MATHEMATICS 111. [1]. *Geometry*

Cartesian co-ordinates. The straight line, circle and conics with some elementary properties. (Half course.)*

TEXT: Durrant and Kingston, *A New Analytic Geometry*

Day Division: Annually (lectures two hours a week, *both* terms).

Evening Division: Annually (lectures two hours a week, *both* terms). Also Summer 1959 (lectures 2½ hours a week).

Mr. Gamble and Mr. Gardner

MATHEMATICS 112. [1]. *Trigonometry*

Fundamental formulae, solution of triangles, logarithms, applications to problems in statics. (Half course.)*

TEXT: Petrie, Baker, Levitt, and MacLean, *Elements of Trigonometry and Statics*

Day Division: Annually (lectures two hours a week, *both* terms).

Evening Division: Annually (lectures two hours a week, *both* terms.) Also Summer 1959 (lectures 2½ hours a week).

Mr. Treffner and Mr. Rentner

MATHEMATICS 115. *General Mathematics I*

Selected topics of Algebra, Geometry, Trigonometry and other branches of Mathematics.

TEXT: Elliott and Miles, *College Mathematics*.

Day Division: Annually (lectures four hours a week, *both* terms).

Mr. Treffner

MATHEMATICS 200. *General Mathematics II*

Deductive nature of mathematics, and its relation to other branches of science. Selected topics such as probability, matrices, theory of games with applications to social and economic problems. Introduction to calculus and to recent developments of mathematics.

TEXT: M. Richardson, *Fundamentals of Mathematics*.

REFERENCES: Kemeny, Snell and Thompson, *Finite Mathematics*.

Courant and Robbins, *What is Mathematics?*

Kline, *Mathematics and Western Culture*.

Day Division: Annually (lectures three hours a week, *both* terms).

Professor Lightstone

*Any one of Mathematics 110, 111, 112 carries half-course credit. Full-course credit is given when two or three of these are taken. Students are reminded that all three are prescribed in the first year of the B.Sc. and the B.Com. courses, and for entry to the Engineering course. The tuition fee for one of the three is that of a half course; the fee for any two or three, taken in the same year, is that of a full course.

MATHEMATICS 211. *Calculus*

An introductory course in differential and integral calculus, with emphasis on the fundamental processes and applications. Some topics of algebra and geometry are also included, namely, polar coordinates, solution of equations, solid analytic geometry, complex numbers and determinants.

TEXT: Love and Rainville, *Differential and Integral Calculus*.

PREREQUISITE: Mathematics 110, 111, 112. (Permission may be granted to enter with two of these.)

Day Division: Annually (lectures four hours a week).

Evening Division: Annually (lectures four hours a week). Summer 1959 (lectures six hours a week.)

Professor Macphail and Mr. Treffner

MATHEMATICS 220.[3a]. *Mathematics of Investment*

Simple and compound interest, discount, annuities, perpetuities, amortization, sinking funds, bonds, debentures, depreciation, probability and its application to life insurance. (Half course.)

TEXT: Hart, *Mathematics of Investment*.

PREREQUISITE: Mathematics 110, 111, or Mathematics 115.

Day Division: Not offered 1959-60.

Evening Division: 1959-60 (lectures 1½ hours a week, both terms).

Miss Brown

MATHEMATICS 230.[3b]. *Elementary Mathematical Statistics—Part I*

Frequency distributions; measures of central tendency, dispersion, skewness, kurtosis; moments; elementary probability; probability distributions—binomial, normal, Poisson. (Half course) (See also Economics 320, Statistical Methods in the Social Sciences).

TEXT: Dixon and Massey, *Introduction to Statistical Analysis*.

PREREQUISITE: Mathematics 110, 111, or Mathematics 115.

Evening Division: Annually (lectures three hours a week, first term).

Mr. Dale

MATHEMATICS 235.[3c]. *Elementary Mathematical Statistics—Part II*

Sampling; statistical inference; tests of hypotheses—mean variance; use of the “t”, “F”, and “chi-squared” distributions; confidence limits—mean, variance; introduction to analysis of variance, including randomized block design; enumeration statistics; least squares, simple regression and correlation. (Half course).

PREREQUISITE: Mathematics 230.

Evening Division: Annually (lectures three hours a week, second term).

Mr. Dale

MATHEMATICS 236. *Applied Statistics*.

Random sampling from finite and infinite populations; applications of hypergeometric, binomial, Poisson, normal and chi-squared distributions; types of error; operating characteristics; sampling inspection; single, double and sequential sampling plans; quality control and control charts; tolerance limits; sensitivity experiments. Applications will be mainly in industry, manufacturing, and engineering. (Half course.)

Not offered 1959-60.

MATHEMATICS 237. *Sampling Survey Methods*

Theory of sampling from finite populations; sample design, random, stratified, etc.; area, quota, purposive, systematic and multi-stage sampling; principles of optimum allocation; relative efficiencies of different methods. (Half course).

Not offered 1959-60.

MATHEMATICS 247. *Analytic Geometry, Spherical Trigonometry, and Algebra.*

Conic sections, transformation of coordinates, solid analytic geometry. Spherical trigonometry. Solution of equations.

TEXTS: Rider, *Analytic Geometry.*

Griffin, *Spherical Trigonometry*

Rosenbach and Whitman, *College Algebra.*

Day Division: Annually, for first year Engineering students only (lectures two hours a week).

Mr. Gamble

MATHEMATICS 260. [9c]. *Intermediate Algebra*

Theory of equations, including discriminants and Sturm's Theorem; number systems, groups, matrices and determinants. (Half course.)

TEXT: Birkhoff and MacLane, *A Brief Survey of Modern Algebra.*

PREREQUISITE: Mathematics 255.

Day Division: Not offered, 1959-60.

Evening Division: 1959-60 (lectures three hours a week, first term).

Professor Sample

NOTE. After 1959-60, Mathematics 260 and 345 will be *discontinued*, and replaced by a new course, for which the prerequisite will be Mathematics 305.

MATHEMATICS 305. *Algebra and Geometry*

Theory of equations; matrices and determinants; linear equations; discriminant and resultant; quadrics and rulings; principal axis transformation in two and three dimensions; invariants.

TEXTS: To be announced.

PREREQUISITE: Mathematics 211.

Day Division: 1959-60 (lectures three hours a week).

MATHEMATICS 310. [8]. *Calculus and Differential Equations*

Technique of integration, multiple integrals, partial differentiation, Taylor's theorem, indeterminate forms, curvature. Ordinary differential equations, with applications.

TEXTS: Love and Rainville, *Differential and Integral Calculus.*

Kells, *Elementary Differential Equations.*

PREREQUISITE: Mathematics 211.

Day Division: Annually (lectures three hours a week).

Evening Division: Not offered, Winter 1959-60. Offered Summer 1959 (lectures five hours a week).

Professor Sample

MATHEMATICS 320. [11]. *Advanced Calculus*

Limits and continuity, partial derivatives, vectors, Riemann integral, multiple integrals, line and surface integrals, convergence of series and integrals.

TEXT: A. E. Taylor, *Advanced Calculus*

PREREQUISITES: Mathematics 247 or 250 and 255, and Mathematics 310.

Day Division: 1959-60 (lectures three hours a week).

Evening Division: Not offered, 1959-60.

Professor Sample

MATHEMATICS 326. *Applied Mathematics*

Series solutions of ordinary differential equations; Mathematical Methods; solution of partial differential equations; Fourier series and integrals, Laplace transforms, Gamma, Bessel and Legendre functions; Jacobian, change of variables; vector analysis, Green's and Stokes' theorems; complex variables, mappings, Taylor and Laurent series, contour integration; asymptotic expansions; calculus of variations.

TEXTS: Kells, *Elementary Differential Equations*.

Reddick and Miller, *Advanced Mathematics for Engineers*.

REFERENCE: Woods, *Advanced Calculus*.

PREREQUISITE: Mathematics 310.

Day Division: Annually (lectures three hours a week).

Professor Northover

MATHEMATICS 328. *Applied Mathematics*

Ordinary and partial differential equations with applications to heat transfer, vibrations, stress analysis, electric circuits. Fourier series and Laplace transforms. Complex variables. Gamma, Bessel and Legendre functions.

MATHEMATICS 330.[10]. *Modern Algebra II*

Groups, rings, fields. Galois theory.

TEXT: Van der Waerden, *Modern Algebra*.

PREREQUISITE: Mathematics 260.

Day or Evening Division: Tutorial hours arranged.

Members of the Department

MATHEMATICS 335.[13]. *Intermediate Statistical Analysis*

Linear and curvilinear regression; frequency distributions in two variables; multiple and partial correlation; other measures of correlation; index numbers; time series. Analysis of variance and covariance; design of experiments; Latin squares and split plot designs; qualitative statistics; non-parametric methods.

TEXT: To be announced.

PREREQUISITE: Mathematics 230, 235.

Evening Division: 1959-60 and alternate years (lectures three hours a week).

MATHEMATICS 340. *Introduction to Mathematical Logic*

Propositional calculus and predicate calculus; structures; Boolean algebra, representation theorem; axiom of choice.

TEXTS: To be announced.

Day and Evening Division: Tutorial hours arranged.

MATHEMATICS 345. [15a]. *Solid Analytic Geometry and Linear Algebra*

Transformations of co-ordinates, continuation of matrix algebra, reduction of quadrics to principal axes, projective transformations, and related topics. (Half course.)

See note following Mathematics 260.

TEXT: To be announced.

PREREQUISITE: Mathematics 250, 260.

Day Division: Not offered, 1959-60.

Evening Division: 1959-60 (lectures three hours a week, *second* term).

Professor Semple

MATHEMATICS 350.[15b]. *Numerical Methods*

Finite differences, with applications to interpolation, numerical integration, differentiation, and solution of differential equations. Methods of matrix elimination and inversion, with applications to least squares and regression. Introduction to computer programming. (Half course).

PREREQUISITE: Mathematics 211. Knowledge of the elements of differential equations and matrix algebra is also desirable.

TEXT: To be announced.

Evening Division: Not offered, 1959-60.

MATHEMATICS 355.[20a and 20b]. *Probability and Statistical Inference*

Logical foundations and axiomatic treatment of probability. Distribution functions in one or more dimensions. Stieltjes integrals. Moments. Binomial, normal, Poisson, chi-squared, t, F distributions. Generating and characteristic functions. Limit theorems. Stochastic convergence and the law of large numbers. Fundamentals in estimation and testing hypotheses. Criteria of consistent, efficient and sufficient estimates. The method of maximum likelihood. The power of a test. Illustrations from physical, biological and social sciences.

TEXT: Mood, *Introduction to the Theory of Statistics*

PREREQUISITE: Mathematics 310.

Evening Division: 1960-61 and alternate years.

Dr. Robinson

MATHEMATICS 365.[12a]. *Complex Variable*

General properties of analytic functions. (Half course.)

TEXT: Copson, *Theory of Functions of a Complex Variable*.

PREREQUISITE: Mathematics 320.

Day or Evening Division: Tutorial hours arranged.

MATHEMATICS 370.[12b]. *Special Functions*

TEXT: Copson, *Theory of Functions of a Complex Variable*

PREREQUISITE: Mathematics 365.

Day or Evening Division: Tutorial hours arranged.

MATHEMATICS 375.[17]. *Differential and Integral Equations*

Advanced theory of differential equations. Theory and application of Laplace transforms. Introduction to integral equations.

TEXTS: Barkill, *Theory of Ordinary Differential Equations*.

Sneddon, *Elements of Partial Differential Equations*.

REFERENCES: Churchill, *Modern Operational Mathematics in Engineering*.

Piaggio, *Differential Equations*.

Smith, *Mathematical Methods for Scientists and Engineers*.

PREREQUISITES: Mathematics 320, 325.

Day or Evening Division: Tutorial hours arranged.

MATHEMATICS 380.[18a]. *Differential Geometry*

Theory of curves and surfaces. (Half course.)

TEXT: Struik, *Introduction to Classical Differential Geometry*.

REFERENCES: W. Blaschke, *Differentialgeometrie I*.

C. E. Weatherburn, *Differential Geometry*.

PREREQUISITE: Permission of the Department.

Day or Evening Division: Tutorial hours arranged.

MATHEMATICS 381. *Tensor Calculus*

A development of tensor calculus with application to the study of Riemannian spaces. (Half course).

TEXT: To be announced.

REFERENCE: Weatherburn, *Riemannian Geometry and the Tensor Calculus*.

Day or Evening Division: Tutorial hours arranged.

MATHEMATICS 385.[19a]. *Projective Geometry*

(Half course.)

TEXT: Coxeter, *The Real Projective Plane*

PREREQUISITE: Mathematics 260, 345.

Day or Evening Division: Tutorial hours arranged.

MATHEMATICS 391. *Problems and Readings*.

Honours students work a number of advanced problems drawn from various sources. Readings are also assigned, and an examination is set, covering the whole course.

PREREQUISITE: Open only to honours Mathematics students.

Day or Evening Division: Tutorial hours arranged.

MATHEMATICS 395. *Directed Special Studies*

Honours students may be required to present a report or thesis on parts of mathematics not included in the courses listed above. (Half course.)

PREREQUISITE: Open only to honours Mathematics students.

Day or Evening Division: Tutorial hours arranged.

GRADUATE STUDIES

The Mathematics Department is prepared to direct graduate students in certain branches of the following: Algebra, Applied Mathematics, Analysis, Logic, and Statistics.

A selection from the following courses will be offered if there is sufficient demand.

MATHEMATICS 510. *Advanced Probability and Statistics*

(Texts by Feller and Cramer).

MATHEMATICS 520. *Real Variables, Fourier Series, Functional Analysis*

Professor Macphail

MATHEMATICS 530. *Advanced Statics and Analytical Dynamics*

General systems of forces and Poinsot's reduction to a single force and a wrench. Selected topics in Statics including theory of attractions. Dynamics of a Particle and of Rigid Bodies including Central Orbits, rotating frames of reference and the influence of the rotating earth. Constrained motion: motion of a particle on curves and surfaces. Moments and Products of Inertia of a Rigid Body. Kinetic energy, linear momentum and angular momentum of a rigid body: general equations of motion: motion under no forces. Tops and gyroscopes. Lagrange's equations for holonomic systems: extension to non-holonomic systems: theory of small vibrations. Variational methods. Least action and Hamilton's principle.

PREREQUISITE: Math 326 or the equivalent. Registrants for this course will also find it useful to have had some experience of elementary (two dimensional) mechanics.

TEXTS: Ramsey: Dynamics II.

Ramsey: Statics.

Professor Northover

MATHEMATICS 531. *Hydrodynamics and Wave Motion*

The fundamental theory of hydrodynamics, with special reference to aerodynamics, including irrotational motion in two and three dimensions, vortices, discontinuous flow, Blasius' theorem, aerofoil theory, wave motion, viscous flow.

PREREQUISITE: Math 326 or the equivalent.
TEXT: Ramsey: *Treatise on Hydromechanics*, Part II.

Professor Northover

MATHEMATICS 532. *Electromagnetic theory and Magneto-hydrodynamics*

Electromagnetic theory leading up to Maxwell's equations. Cartesian Tensors. The space-time continuum: the tensor formulation of Maxwell's equations and the Lorentz transformation. Propagation of electromagnetic waves through isotropic and anisotropic media. Propagation through ionised gases and the magneto-ionic theory: critical (plasma) frequency: Martyn's theorem. An introduction to Magneto-hydrodynamics.

PREREQUISITE: Math 326 or the equivalent.
TEXT: Abraham and Becker: *Classical Electricity and Magnetism*.
REFERENCES: Stratton: *Electromagnetic theory*.
Cowling: *Magneto-hydrodynamics*.

Professor Northover

MATHEMATICS 540. *Modern Algebra*

One of the following subjects will be treated; theory of groups, theory of rings, algebraic number theory, elementary algebraic geometry.

Professor Semple

MATHEMATICS 550. *Mathematical Logic*

Completeness theorem of the predicate calculus; predicate calculus with equality; application to Algebra; decision problem, complete theories Some recent research papers will be studied.

Professor Lightstone

MATHEMATICS 560. *General Topology*

TEXT: J. L. Kelley, *General Topology*.

Professor Semple

<i>Discontinued Courses</i>		<i>Last offered</i>
MATHEMATICS	5. <i>Calculus</i>	1951-52
MATHEMATICS	6. <i>Calculus</i>	1951-52
MATHEMATICS	7. <i>Spherical Trigonometry</i>	1948-49
MATHEMATICS	14. [Statistics 2]. <i>Statistical Services</i>	1950-51
MATHEMATICS	210. <i>Calculus</i>	1957-58
MATHEMATICS	240, 250. <i>Analytic Geometry</i>	1956-57
MATHEMATICS	245, 255. <i>Algebra</i>	1956-57
MATHEMATICS	325. <i>Differential Equation</i>	1957-58
MATHEMATICS	327. <i>Applied Mathematics</i>	1957-58
MATHEMATICS	390. <i>Problems in Mathematics</i>	1956-57
MATHEMATICS	250, 255. <i>Analytic Geometry, Algebra</i>	1958-59

PHILOSOPHY

Associate Professor; Chairman of the Department, 1959-60

J. C. S. Wernham, M.A., S.T.M.

Associate Professor Bernard Wand, M.A., Ph.D.

Lecturers James M. Thompson, M.A.

R. S. Talmage, B.A.

Sessional Lecturer Mark McClung, B.A.

Either Philosophy 210 or Philosophy 220 satisfies the curriculum requirement, and only one of these may be taken for academic credit. Majors in Philosophy will take a minimum of five courses in Philosophy. Special arrangements will be made for students proposing a combined major program. All majors will arrange their programs in consultation with the department.

PHILOSOPHY 210. *Introduction to Philosophy*

An examination of the nature of critical thinking and its application to conduct. The course is designed to exhibit the rules of inference which provide a distinction between valid and invalid reasoning as applied to any subject matter. Consideration is then given to the nature of meaning as it applies in ordinary discourse and to the nature of inductive reasoning particularly as it appears in the inquiries of the natural sciences. Finally, an attempt is made to examine the nature of reasoning in resolving problems of morality.

Day Division: Annually (lectures two hours a week, discussion one hour a week).

Evening Division: Not offered, 1959-60.

Professor Wand

PHILOSOPHY 220. *Introduction to Philosophy*

Topics will include: The nature of meaning; the distinction between and the nature of necessary and empirical knowledge; the concepts of law, cause, explanation and freedom; theories of mechanism and vitalism; theories of sense perception; problems and theories of ethics and aesthetics.

Day Division: Annually (lectures two hours a week, discussion one hour a week).

Evening Division: 1959-60 (lectures two hours a week, discussion two hours fortnightly).

Professor Wernham and Mr. McClung

PHILOSOPHY 310. [3, 310, 220]. *Greek Philosophy*

An account of the early history of philosophical speculation in the Greek world, of the role of the Sophists and of Socrates; together with a study of selected writings of Plato and Aristotle.

PREREQUISITE: Philosophy 210 or 220 or permission of the Department.

Day Division: Annually (lectures and discussion three hours a week).

Mr. Thompson

PHILOSOPHY 320. [4]. *Modern Philosophy: 1600-1800.*

An examination of the major philosophical writers of the seventeenth and eighteenth centuries. Selections will be studied from the works of Descartes, Spinoza, Leibniz; Locke, Berkeley, Hume; and Kant.

PREREQUISITE: Philosophy 210 or 220; or permission of the Department.

Day Division: Annually (lectures and discussion three hours a week).

Professor Wernham

PHILOSOPHY 330. [5]. *Modern Philosophy: 1800—.*

An examination of the major philosophical writers of the nineteenth and twentieth centuries. Extensive readings in the original literature will be required.

PREREQUISITE: Philosophy 210 or 220; or permission of the Department.

Day Division: Annually (lectures three hours a week).

Mr. Thompson

PHILOSOPHY 340. *Ethics*

A historical and critical analysis of the chief concepts used to explain and justify moral thinking and conduct. The theoretical accounts of the concepts of 'right', 'duty' and 'good', as they are found in the writings of modern and contemporary philosophers, are considered. An analysis of the nature of egoism, sympathy, and altruism is given in an attempt to determine the possibility of disinterested actions. Finally, the relationship between morality and certain political, religious, and scientific beliefs is examined.

PREREQUISITE: Philosophy 210 or 220; or permission of the Department.

Day Division: Annually (lectures and discussion three hours a week).

Professor Wand

PHILOSOPHY 350. [7]. *Philosophy and Religion*

An investigation, both historical and systematic, into the relations between faith and reason; together with an examination of the question of the existence and nature of God. Texts to be studied will be representative of mediaeval Scholasticism, German Idealism, Existentialism, and Philosophical Analysis.

PREREQUISITE: Permission of the Department.

Day Division: 1959-60 (seminar two hours a week).

Professor Wernham

PHILOSOPHY 360. *Social and Political Philosophy*

An examination of the concepts of natural law, inalienable rights and social justice; and a consideration of the moral basis of political obligation. Emphasis will be on analysis rather than on historical origins.

PREREQUISITE: Philosophy 210 or 220; or permission of the Department.

Day Division: Annually (seminar 2 hours per week).

Professor Wand

PHILOSOPHY 370. *Logic and Scientific Method*

A systematic investigation of the principles of deductive inference, followed by an examination of the nature and methods of the empirical sciences. Among topics for consideration will be: the role of logic and mathematics in the sciences; the fundamentals of measurement; types of scientific explanation and understanding; the construction and validation of scientific hypotheses and theories.

PREREQUISITE: Philosophy 210 or 220; or permission of the Department.

Day Division: Annually (lectures and discussion three hours a week).

Mr. Talmage

PHILOSOPHY 380. *Philosophical Analysis*

A brief account of the history of the movement in its several branches will be followed by careful study of representative samples of analytic philosophy. The readings will be chosen with a view to exhibiting (a) variations in the conception of analysis, and (b) the application of analytic techniques to a variety of philosophical problems.

PREREQUISITE: Philosophy 210 or 220; or permission of the Department.

Day Division: Annually (lectures and discussion three hours a week).

Mr. Talmage

PHILOSOPHY 388. *The Philosophy of History*

See course description and details under History 388.

Discontinued Courses	Last offered
PHILOSOPHY 2. <i>Introduction to Philosophy</i>	1948-49
PHILOSOPHY 2. <i>Critical Thinking</i>	1951-52
PHILOSOPHY 6. <i>Theory of Value</i>	1951-52

PHYSICS

<i>Professor, Chairman of Department, 1959-60</i>	A. M. Munn, M.Sc., Ph.D., F.R.S.A. (on leave of absence, 1959-60)
<i>Associate Professors</i>	G. R. Love, M.A., Ph.D. J. Hart, B.Sc., Ph.D., A.Inst.P.
<i>Assistant Professors</i>	A. C. Ghosh, M.Sc. (on leave of absence, 1959-60) T. J. S. Cole, B.Sc. (Eng.), B.Sc., A.C.G.I.
<i>Lecturer</i>	David L. Matthews, B.Sc., Ph.D.
<i>Demonstrators</i>	E. Butterill, B.A. C. Covington, B.A.
<i>Physics Laboratory Steward</i>	K. Hafner

Students majoring in the humanities or social sciences and taking a single course in physics should take Physics 200. Others may take it by special permission.

Students majoring in the sciences and taking a single course in physics should take Physics 205.

A minor in physics consists of Physics 205, 304, and 305.

Students are not normally permitted to register in courses higher in number than 306 unless they have obtained at least a B average in their Physics 205, 304, and 305 and their mathematics courses.

(For information regarding preparation for admission to the Ontario College of Education for the Interim High School Assistant's certificate, type A, students should consult the Registrar.)

HONOURS COURSE

The first and second years are those of the pass science course, including Physics 205.

In the third year the student takes Physics 304, and 305, Mathematics 310 and three other courses chosen in consultation with the Department.

In the fourth and fifth year the student completes those of Physics 310, 315, 318, 320, 330, 335, 345, and 360 not taken in the third year, Mathematics 326 and one other Mathematics course, and two courses from the humanities or social sciences.

At the end of the final year, comprehensive examinations are given in physics and related mathematics, and the student must submit a thesis on his work carried out in Physics 360.

BACHELOR OF SCIENCE WITH HONOURS IN APPLIED PHYSICS

This course leading to the degree of Bachelor of Science with Honours in Applied Physics is designed to serve students whose interest is in engineering research.

Admission Requirements: Admission is open only to students who have completed the first two years of the regular engineering course with a minimum standing of high second class honours.

Length of Course: Subsequent to the two years in engineering, candidates will take a minimum of ten courses spread over two years. (Making a total of five years from Junior Matriculation or four years from Senior Matriculation.)

Course Selection: Courses will be selected in consultation with the chairman of the Physics department.

GRADUATE STUDIES

Graduate students will be accepted, at the discretion of the Department, for full-time work in the physics research laboratories under the supervision of members of the Department. Some assistantships are available.

PHYSICS 200. *Concepts and Methods in Physical Science*

This course is planned to give some comprehensive world picture of the physical sciences as they have developed in the past four centuries and as they exist today. Enough detail will be presented to explicate the inductive method of theory formation, but other than this an encyclopedic attention to detail will be avoided. The emphasis will be upon the logical structure.

Day Division: Annually. Two one-hour lecture demonstration periods and one three-hour laboratory seminar per week.

Evening Division: Not offered 1959-60.

PHYSICS 205. *General Physics*

This course provides an introduction to the whole field of physics. The lectures begin with a study of Newtonian mechanics and elementary rotational and wave dynamics. The relationships between mechanics and empirical observation in the classical fields of heat, light, sound, electricity, magnetism, astronomy, and the general properties of matter are discussed. A study of the Bohr atomic theory leads to a more qualitative description of modern atomic and nuclear physics. In the laboratory, the emphasis is placed upon the accurate performance of simple experiments, the writing of intelligible reports, and the estimation of experimental errors.

TEXTS: Margenau, Watson and Montgomery, *Physics Principles and Applications*.

Avery & Ingram, *Laboratory Physics*

Chapman, *How to study Physics*

PREREQUISITES: Mathematics 211 (may be taken concurrently).

Day Division: Annually (lectures three hours per week, laboratory three hours per week).

Evening Division: Not offered 1959-60.

Professor Hart

PHYSICS 304. *Mechanics, Heat, and Wave Motion*

This course extends the work begun in Physics 205 to more difficult phenomena in the fields of mechanics, heat, kinetic theory, the general properties of matter, geometrical and physical optics, and acoustics. The mathematical techniques of calculus are used throughout. The laboratory work is planned to teach the student techniques in accurate physical measurement.

TEXTS: Shortley and Williams, *Physics, Vols. I. & II.*

PREREQUISITE: Physics 205, Mathematics 211.

Day Division: Not offered 1959-60.

Evening Division: (One three hour lecture period and one three hour laboratory period weekly).

Professor Cole

PHYSICS 305. *Electricity & Magnetism and Modern Physics*

The studies begun in Physics 205 are extended in the fields of electricity and magnetism, atomic, and nuclear physics. An introduction is made to simple electronic devices and their application. In the laboratory, the emphasis is on electrical measurements.

TEXT: Shortley and Williams, *Physics, Vol. II.*

PREREQUISITES: Physics 205, Mathematics 211.

Day Division: Annually (Lectures three hours per week, laboratory three hours per week.)

Evening Division: Not offered 1959-60.

Professor Love

PHYSICS 306.

This course is the *first half* of Physics 305 and may be taken by second year engineering students only.

Professor Love

PHYSICS 310. *Thermodynamics and Statistical Mechanics*

This course is an extension of the work begun in Physics 205 and 304 in the fields of heat, thermodynamics and statistical mechanics. More advanced mathematical techniques are employed, including partial differentiation and differential equations. The presentation is mostly in terms of the classical theory, although there is an introduction to quantum statistical theory. An important part of the course is the solution by the student himself of several hundred problems.

TEXT: Zemansky, *Heat and Thermodynamics*.

PREREQUISITES: Physics 205, 304, 305, Mathematics 211, 310.

Day Division: Not offered 1959-60.

Evening Division: One three-hour seminar weekly.

PHYSICS 315. *Optics*

The principles of geometrical optics including Fermat's Principle are studied. Application is made to ideal optical systems, the first order theory of lenses and systems of lenses, the physical limitations of images, apertures, photometry and image brightness. In physical optics a study is made of interference and diffraction phenomena, polarization, dispersion, radiation and spectra, magneto- and electro-optics and the scattering of light. The laboratory work emphasizes optical measurement.

TEXT: Valasek, *Introduction to Theoretical & Experimental Optics*.

PREREQUISITES: Physics 205, 304, 305, Mathematics 211, 310.

Not offered, 1959-60.

PHYSICS 318. *Electron Physics*

The work of Physics 305 is extended into a more advanced mathematical study of electronic devices and further circuit analysis. The theories of solid state and other electron devices are discussed. In the laboratory, the student designs and builds basic electronic circuits.

PREREQUISITES: Physics 205, 304, 305, Mathematics 211, 310.

Day Division: (One three hour seminar and one three hour laboratory period weekly).

Professor Hart

PHYSICS 320. *Vector Mechanics*

Using the methods of vector analysis, the motion of a particle and a rigid body in one, two, and three dimensions is discussed. Lagrange's and Hamilton's Equations are developed and applied to more complicated systems. The emphasis is on problem solution by the student.

TEXT: Becker, *Introduction to Theoretical Mechanics*.

PREREQUISITES: Physics 205, 304, 305, Mathematics 211, 310, 326.
(the latter may be taken concurrently).

Day Division: 1959-60. One three hour seminar per week.

Professor Love

This is a study of the classical theory of electricity and magnetism using vector analysis and complex variable theory. Among the topics discussed are electrostatics, dielectrics, conductors, electro-magnetic effects of steady and alternating currents, Maxwell's equations, the propagation of waves through media and wave guides and radiation theory. The emphasis is upon problem solution by the student.

PREREQUISITES: Physics, 205, 304, 305, Mathematics 211, 310, 326.

Not offered, 1959-60.

In this course the developments that have taken place in the last half century in physics are studied. The student performs a number of typical experiments and measurements in the field of atomic and nuclear physics.

Not offered, 1959-60.

This course constitutes an introduction to wave mechanics, matrix mechanics, and relativity theory.

PREREQUISITES: For final year honours Physics students only, except by special permission.

Not offered, 1959-60.

During this course, the student will learn to design and construct simple research apparatus.

Day Division: 1959-60. Six hours laboratory and workshop per week.

Mr. Hafner

This is an advanced laboratory project course with an orientation towards research; the presentation of a thesis is required.

Day Division: 1959-60. A minimum of six hours laboratory per week.

Members of the Department

A post-graduate tutorial course in which theories of the fundamental physical properties of matter and their relationship with experimental observations are discussed.

PREREQUISITE: Admission to a post-graduate degree course of studies.

Day Division: 1959-60, by arrangement.

Professor Hart

Last offered

[illegible]

POLITICAL SCIENCE

<i>Professors</i>	. . . . .	R. O. MacFarlane, M.A., Ph.D. D. C. Rowat, A.M., Ph.D.
<i>Associate Professor; Chairman of the Department, 1959-60</i>		K. D. McRae, A.M., Ph.D.
<i>Associate Professors</i>	. . . . .	D. G. Anglin, M.A., D.Phil. Pauline Jewett, M.A., Ph.D.
<i>Sessional Lecturers</i>	. . . . .	C. J. Webster, B.Sc. (Econ.), M.A. C. S. Juvet, B.Com., M.A.

Ottawa provides a wealth of resources, both in personnel and in research materials, for the student of government, politics, public administration, and international relations. Undergraduates will be assisted in making the fullest use of these unique advantages of the national capital.

PASS COURSE

A major in Political Science (or a combined major including Political Science) requires at least five courses in the Department, including Political Science 210 and 360. The entire program must be approved by the Chairman of the Department.

Students who wish to major (or to take honours) in Political Science will be expected to fulfill the summer reading requirements.

HONOURS COURSES

Honours programs may be entered from the Honours second year in the Social Sciences (see pp. 84-85), or by transfer from the Pass Course if second class standing or better has been obtained. The following programs are available:

Political Science. For full honours nine courses in Political Science will be required, including Political Science 210, 340, 360, 380, 390, and 320 or 325. Candidates will normally be asked to present a graduation essay on some topic involving independent investigation, the subject to be chosen in consultation with a full-time member of the Department. They must select a minor field, preferably in Economics, History, Philosophy or Sociology, and by the final year must show a reading knowledge of a language other than English, preferably French, German, or Russian.

Economics and Political Science. Students intending to enter this program should take Economics 210 or Political Science 210 (or preferably both) in the second year. The choice of courses in subsequent years will be subject to the approval of the Chairmen of the two Departments. The honours requirements include at least six courses in Economics and six courses in Political Science; normally a student will take at least 14 courses in Economics, Political Science, and related fields. These will be arranged so that the student may transfer either to full honours in Economics or to full honours in Political Science at the end of the fourth year, if he then wishes to specialize more intensively.

History and Political Science. Students intending to enter this program should take History 220 or Political Science 210 (or preferably both) in the second year. The choice of courses in subsequent years will be subject to the approval of the Chairmen of the two Departments. The program requires at least eight courses in History and seven courses in Political Science, including History 396 or Political Science 390. The course pattern will be arranged so that the student may transfer either to full honours in History or to full honours in Political Science at the end of the fourth year, if he then wishes to specialize more intensively.

Public Administration. The Honours program in Public Administration is outlined on pp. 69-70.

GRADUATE STUDIES

The Department offers studies leading to the degree of Master of Arts in areas of political science for which adequate study materials are available. For further information consult the Department. Graduate programs in Public Administration are outlined on pp. 72-74.

POLITICAL SCIENCE 210. [2]. *Introduction to Political Science*

An introduction to the theory and practice of modern political ideas and institutions, with particular attention to the structure of the government of Canada.

Day Division: Annually (lectures and discussion three hours a week).

Evening Division: Annually (lectures and discussion three hours a week).

Also Summer 1959 (lectures five hours a week).

Members of the Department

POLITICAL SCIENCE 310. [3]. *Comparative Parliamentary Systems*

A comparative study of government and politics in Great Britain, France, and other European parliamentary democracies.

PREREQUISITE: Political Science 210.

Not offered 1959-60.

POLITICAL SCIENCE 315. *The Commonwealth in Asia and Africa*

A comparative study of the evolution and working of political institutions in India, Pakistan, Ceylon, Malaya, Ghana and the Union of South Africa, and in selected British territories elsewhere in Asia and Africa (and the West Indies) at various stages of development. Some attention will be paid to the nature and organization of the modern Commonwealth and to the colonial policies of other powers.

PREREQUISITE: Preferably Political Science 210.

Day and Evening Division: 1959-60 (lectures and seminar three hours a week).

Professor Anglin

POLITICAL SCIENCE 320 [11]. *Canadian Federalism*

An analysis of the Canadian federal system, and of federalism generally, including such matters as the written constitution; trends in judicial interpretation and the nature of the judicial process; problems of constitutional amendment, disallowance and reservation; political, economic and administrative relations between central and provincial governments; the impact of federalism on governmental institutions; the role of political parties in province and nation; the relationship between federalism, political parties, and democracy.

PREREQUISITE: Political Science 210.

Day Division: 1960-61 and alternate years.

Evening Division: 1959-60 and alternate years (lectures and discussion three hours a week).

Professor Jewett

POLITICAL SCIENCE 325. *Government of Canada*

A seminar on topics in Canadian government. Reports will be presented and discussed in class on such topics as institutions, procedures, politics, group influences, and control agencies.

PREREQUISITE: Political Science 210, and preferably a further course in Political Science.

Day and Evening Division: 1959-60 (seminar three hours a week).

Professor MacFarlane

POLITICAL SCIENCE 330. [13]. *Soviet Russia*

An introduction to the study of the U.S.S.R., with emphasis on systematic political analysis: the historical and geographical background; the evolution, organization and interrelation of Soviet institutions; Russian and Marxist influences on their shape and function; domestic and foreign problems and policy; a comparison of goal and achievement; the meaning of the Soviet experiment.

TEXT: Fainsod, *How Russia is Ruled*, and supplementary readings.

PREREQUISITE: Preferably Political Science 210 and a further course in Political Science.

Evening Division: Annually (lectures and discussion three hours a week).

Mr. Webster

POLITICAL SCIENCE 335. [8]. *Government and Politics in the United States*

A survey of American political thought and constitutional development and an analysis of the American governmental process, with particular reference to the role of political parties and pressure groups.

PREREQUISITE: Political Science 210.

Day Division: 1959-60 (lectures and discussion three hours a week).

Professor Jewett

POLITICAL SCIENCE 340. [6]. *Problems in Public Administration*

A comprehensive survey of problems in Canadian public administration, with concentration on those at the national level. The course includes an examination of departmental organization in theory and practice, informal organization and the human element, semi-independent agencies, intergovernmental administration, the dynamics of management (decision-making, planning, coordinating, etc.), financial and personnel administration, administrative discretion, and the system of responsibility in a democracy. The seminar work includes use of the case-study technique as developed at Harvard University.

TEXTS: Simon *et al.*, *Public Administration*.

Cole, *The Canadian Bureaucracy*.

Buck, *Financing Canadian Government*.

Institute of Public Administration of Canada, *Proceedings*.

PREREQUISITE: Political Science 210, and preferably a further course in Political Science.

Evening Division: 1959-60 (lectures and discussion three hours a week).

Professor Rowat

POLITICAL SCIENCE 360. [4]. *History of Political Thought*

A general survey of the history of some phases of thought, with special reference to political theory, from ancient times to the close of the eighteenth century. A course in ideas, their sources, their validity, and their significance. Some of the works of the following authors are among the material considered: Plato, Aristotle, Machiavelli, Bodin, Hobbes, Locke, Rousseau, and Burke.

PREREQUISITE: Political Science 210, or History 220.

Day Division: 1959-60 and alternate years (lectures and discussion three hours a week).

Evening Division: 1960-61 and alternate years.

Professor McRae

POLITICAL SCIENCE 365. *Modern Political Thought*

A seminar on the major political ideas of the nineteenth and twentieth centuries, and on some of the currents in intellectual history which have contributed to their development.

PREREQUISITE: Political Science 360, or permission of the Department.

Day and Evening Division: 1959-60 (lectures and seminar two and a half hours a week).

Professor McRae

POLITICAL SCIENCE 380. *International Politics*

An introduction to the study of international politics, particularly in the period from 1939 to the present, with some attention to the problems of international organization.

PREREQUISITE: Political Science 210, or permission of the Department.

Day Division: 1959-60 (lectures and discussion three hours a week).

Professor Anglin

POLITICAL SCIENCE 385. *International Institutions*

A study of the origins, structure and functioning of modern international institutions, with special emphasis on the League of Nations, the United Nations, and regional co-operation in Europe and the Atlantic community. The major constitutional and political problems of international organization will be considered against the background of world affairs in general.

PREREQUISITES: Political Science 380 or History 380, or permission of the Department.

Not offered 1959-60; to be offered 1960-61.

POLITICAL SCIENCE 390.[14]. *Tutorial in Political or Administrative Research*

This course, for honours students only, is designed for training in research techniques and for the discussion and criticism of honour graduation essays, and other special research projects pursued under the auspices of the Department in connection with the facilities available in the Public Archives of Canada, the Library of Parliament, and the government departments.

Day Division: Annually (hours arranged).

Members of the Department

GRADUATE COURSES

POLITICAL SCIENCE 540. *Theory and Practice of Administration*

An advanced seminar in which reports will be presented and discussed on specific problems in public administration. Senior government officials will take part in the seminar from time to time.

PREREQUISITE: Political Science 340 (or equivalent) and permission of the Department.

Evening Division: Annually (seminar three hours a week).

Professor MacFarlane

POLITICAL SCIENCE 550.[17, 350]. *Provincial and Municipal Government*

An advanced course dealing with problems of provincial and municipal government and administration, and with problems of inter-governmental relations.

PREREQUISITE: Political Science 210, and preferably a further course in Political Science.

Day and Evening Division: 1959-60 (seminar three hours a week).

Professors MacFarlane and Rowat

POLITICAL SCIENCE 590. *Directed Study in a Selected Field*

This course will be conducted as a tutorial for students taking the M.A. degree in Public Administration who do not elect to write a thesis. The topic will be arranged by the Director to meet the student's special interest, and will include a research essay.

PREREQUISITE: Permission of the Department.

Day Division: Annually (hours arranged).

Members of the Department

POLITICAL SCIENCE 595. *Tutorial for Graduate Students*

This course will be conducted as a tutorial for students working at the M.A. level. Topics will be chosen from some selected area of Canadian government, comparative government, political theory, or international relations. (With Departmental permission, this course may be taken a second time, provided a different area is selected).

PREREQUISITE: Permission of the Department.

Day Division: Annually (hours arranged).

Members of the Department

See also:

SOCIOLOGY 364. *Sociology of Political Behaviour*

SOCIOLOGY 368. *Sociology of Political Power*

HISTORY 380. *An Introduction to International Relations, 1919-1939*

PUBLIC LAW 310. *The Elements of Public Law*

PUBLIC LAW 510. *Administrative Law*

Discontinued Courses

Last offered

POLITICAL SCIENCE 1. *The Government of Canada* 1947-48

POLITICAL SCIENCE 7.[Personnel Management 102]. *Civil Service Principles and Legislation* 1949-50

POLITICAL SCIENCE 10. *Seminar in Political Philosophy (The State and the Individual)* 1950-51

POLITICAL SCIENCE 355.[18]. *Seminar in Democratic Administration* . . . 1952-53

POLITICAL SCIENCE 370.[9]. *Tutorial in Modern English Political Thought* 1950-51

POLITICAL SCIENCE 375.[12]. *Tutorial in European Political Thought* . 1949-50

PSYCHOLOGY

Associate Professor; Chairman of the Department, 1959-60 F. R. Wake, B.A., Ph.D.

Associate Professor R. A. Wendt, M.A.

Sessional Lecturers F. E. Whitworth, A.M., Ph.D.

A. B. Laver, M.A., H. J. Breen, M.A., Ph.D., J. D. Ayers, B.A., B.Ed., Ph.D., T. L. Hoy, M.A.

Special Lecturer N. D. Fenn, B.Sc., M.Ed.

In order to complete a degree with a major in Psychology, the student must have credit for the following: Psychology 210, 305, 390; Economics 320 or Mathematics 230, 235, and two additional courses in Psychology. Psychology majors are required to complete the Summer Reading Requirement.

The Department of Psychology pursues a policy of integrating classroom work with observation periods, field trips, and research projects within the many and varied institutions in and about the City of Ottawa. Such a policy permits the student to see the importance of theoretical studies to the practical applications in human behaviour.

PSYCHOLOGY 210.[2]. *General Psychology*

A survey of general psychology. A systematic study of perception, motivation, learning, emotion, and thought. The psychology of individual differences in intelligence, aptitude, and personality. Psychology applied to study habits, careers, and personal adjustment. Contemporary psychological theories. (A student may not obtain credit for both Psychology 210 and 220).

TEXT: To be announced.

Day Division: Annually (lectures three hours a week).

Evening Division: Annually (lectures two hours a week).

Professor Wake and Mr. Laver

PSYCHOLOGY 220. *Applied Psychology*

The study and application of principles of human behavior in the fields of industry, business, and government. Designed to be of value to students in engineering, science and other practical professions who may not be able to pursue the study of psychology further. (A student may not obtain credit for both Psychology 210 and 220.)

PREREQUISITE: None.

Evening Division: 1959-60 (lectures two hours a week).

PSYCHOLOGY 305. *Experimental Psychology*

An introduction to psychological research, including an examination of methods, theories, and preparation of reports. A number of experiments will be carried out in the laboratory.

TEXT: To be announced.

PREREQUISITE: Psychology 210, which may be taken concurrently; or permission of the Department.

Day Division: Annually (two two-hour laboratory periods a week).

Evening Division: Annually (two two-hour laboratory periods a week).

Professor Wendt

PSYCHOLOGY 310.[6]. *Social Psychology*

A survey of the more important and enduring problems of social psychology, including methods of research. Group dynamics will receive a considerable amount of attention. (This course is listed also as Sociology 310.)

Day Division: 1959-60 (lectures 3 hours a week).

Evening Division: 1959-60 (lectures 2 hours a week).

PSYCHOLOGY 320.[5]. *Child Psychology*

This course traces the growth and development of the child from birth through adolescence. Students will carry out a research project. Field trips will be arranged.

PREREQUISITE: Psychology 210.

Day Division: 1959-60 (lectures three hours a week).

Evening Division: Not offered 1959-0.

Professor Wake

PSYCHOLOGY 330. *Foundations of Psychological Testing*

Theoretical foundation for construction and standardization of psychological tests. Survey of types and uses of current test material. (Half course.)

TEXT: To be announced.

PREREQUISITES: Psychology 210; Economics 320 or Mathematics 230, 235 (may be taken concurrently).

Evening Division: 1959-60 (lectures two hours a week, *first term*).

Dr. Ayers

PSYCHOLOGY 335. *Psychological Testing*

Lectures on methods of administering and scoring tests. Practice in psychological testing. Students will be required to give and score Stanford-Binet, Wechsler-Bellevue, Kuder Preference, and other tests. (Half course.)

TEXT: To be announced.

PREREQUISITE: Psychology 330.

Evening Division: 1959-60 (lectures and practice two hours a week, *second term*).

Mrs. Pimm

PSYCHOLOGY 340. [4, Personnel Management 100]. *Personnel Psychology I*

This course considers the needs of personnel administrators. It deals with current problems and procedures in personnel management, including: employer interviewing and selection, up-grading and training methods, office management, group dynamics, mental hygiene.

TEXTS: To be announced.

PREREQUISITE: Psychology 210. Recommended: Mathematics 230 or Economics 320.

Evening Division: 1959-60 (lectures three hours a week).

Dr. Whitworth

PSYCHOLOGY 345. *Personnel Psychology II*

This course considers the contribution of psychology to business, industry, civil service, etc., including labour-management relations, job-analysis, advertising, working conditions, publications.

TEXT: To be announced.

PREREQUISITES: Psychology 210, and Psychology 340 or permission of the Department.

Day Division: 1959-60 (lectures three hours a week).

PSYCHOLOGY 370. [7]. *Theory of Personality and Adjustment*

This course deals with theories of personality and considerations of processes of normal and abnormal behaviour. The course introduces techniques of personality evaluation which serve as indicators of normal and abnormal adjustments.

TEXTS: To be announced.

PREREQUISITE: Psychology 210.

Day Division: Not offered 1959-60.

Evening Division: 1959-60 (lectures two hours a week).

Professor Wake

PSYCHOLOGY 380. *Psychoanalysis and Motivation*

This course presents a general survey of the important contributions of the various psycho-analytic schools. Common popular misconceptions about psychoanalysis will be discussed and clarified. An attempt will be made to provide a meaningful integration of the basic discoveries of the major "classical" analysts (Freud, Jung, and Adler), and those of the "modern" school (Fromm, Horney, et al). These concepts will be evaluated within the framework of the psychology of motivation, learning, and perception.

PREREQUISITE: Psychology 370, or permission of the department.

Evening Division: 1959-60 (discussion seminar, two hours a week).

Dr. Breen

PSYCHOLOGY 390. *History of Psychology*

The course pursues the growth of psychology as a science. Emphasis is given to the treatment of persisting psychological problems in various theories of the past and the continuing significance of these problems in modern systematic theory.

TEXTS: To be announced.

PREREQUISITE: Psychology 210. Open to fourth-year students only.

Evening Division: 1959-60 (seminar two hours a week).

Professor Wendt

PSYCHOLOGY 505. *Advanced Design of Psychological Experiments*

This course explores the design of experiments through measures of central tendency, correlation, analysis of variance and co-variance, and other advanced techniques. The student will be required to display a well-founded knowledge of the logic basic to research, as well as true competence in computation.

PREREQUISITE: B.A. with major in psychology and permission of department.

TEXT: To be announced.

During 1959-60 may be offered at the discretion of the Department.

PSYCHOLOGY 510. *Learning*

This course will cover the historical development of important learning theories from Aristotle to date. Emphasis will be placed on contributions of each theory to current understanding of human behaviour.

TEXTS: To be announced.

PREREQUISITE: B.A. with major in psychology and permission of the department.

Evening Division: Not offered 1959-60.

PSYCHOLOGY 520. *Perception*

The course in perception will cover the physiological basis of sensation and perception; the philosophical and historical development of perceptual theory in the last five hundred years.

PREREQUISITE: B.A. with major in psychology and permission of the department.

Evening Division: Not offered 1959-60.

PUBLIC ADMINISTRATION

(See Political Science)

PUBLIC LAW

<i>Chairman of the Department, 1959-60</i>	R. O. MacFarlane, M.A., Ph.D.
<i>Sessional Lecturers</i>	G. F. Henderson, Q.C., B.A.
	A. A. Cattanach, Q.C., B.A., LL.B.

PUBLIC LAW 310. [1, 100]. *The Elements of Public Law*

An introduction to the study of law, designed to acquaint the non-lawyer with the principal institutions, concepts, and classifications of the law, with special reference to Canada.

Evening Division: Annually (lectures 2½ hours a week, seminars arranged).

Mr. Henderson

PUBLIC LAW 510. [320. 3, 103]. *Administrative Law*

This course is designed as a study of the field of administrative law in the light of current social and economic problems and relationships and in the light of the trends of modern legislation, with particular reference to Canada. Theories influencing development in the field; delegated legislation and delegated adjudicative power, their nature and extent, reasons for delegation, dangers; judicial and extra-judicial review and control; administrative procedure; suggested reforms.

PREREQUISITE: Public Law 310 or permission of the Department.

Evening Division: Annually (lectures 2½ hours a week, seminars arranged).

Mr. Cattanach

Discontinued Course

Last offered

PUBLIC LAW 2. [102]. *The Constitutional Law of Canada* 1950-51

See also History 330, Canada from 1791

Political Science 320, Seminar in Canadian Federalism

RELIGION

Assistant Professor; Chairman of the Department, 1959-60 L. M. Read, M.A.
Sessional Lecturers Simon L. Eckstein, B.A., B.R.E., M.A.
 J. A. Baycroft, M.A.

The general purpose of courses offered in this department is to promote a sensitive and intellectually mature understanding of the basic ideas and concerns of outstanding religious leaders and movements, primarily in the Judaeo-Christian tradition, irrespective of whether these coincide or conflict with individual convictions. Religious writings are studied critically in an attempt to understand their meaning, to grapple with their problems, and to assess their significance both in their original cultural context and for our own situation.

As general introduction, students are advised to take Religion 210 or 220 or both. If two or more courses are taken in the department, students are advised to make Religion 220 one of these. In 1959-60 other courses may be taken without previous work in the department. In some cases, as noted, the permission of the department is required.

RELIGION 210. *Introduction to Religion*

A general introduction to the study of religion with attention focussing on the Judaeo-Christian tradition.

A comparative study of the basic ideas and practices of Judaism, Roman Catholicism, and Protestantism followed by discussions of Judaeo-Christian thought as related to or contrasted with living Oriental religions, as confronted with problems presented by modern scientific thought and by contemporary social and political developments, and as interpreted by representative contemporary thinkers, e.g. Martin Buber, Jacques Maritain, Albert Schweitzer, Karl Barth, Reinhold Niebuhr.

Evening Division: 1959-60 (lectures two hours a week, group discussions one hour a week).

Professor Read

RELIGION 220. *Introduction to the Bible*

This course will survey the historical background, formation of the literature, and main teachings of the Bible. Text, Canon and translations. The history of Israel and development of Hebrew literature; the major concepts of Hebrew religion; the great prophets; the inter-testamental period. Jewish sects and literature in the New Testament times, including apocalyptic writings and the Dead Sea Scrolls; Hellenistic religion; the contribution of Source and Form Criticism to the interpretation of the Synoptic Gospels; the teaching of Jesus; letters and teaching of Paul; the Johannine writings; the book of Revelation.

Day Division: 1959-60 (lectures two hours a week).

Mr. Baycroft

RELIGION 320. *The Great Non-Christian Religions*

Distinguishing characteristics of religion. Primitive religion of ancient Egypt. The history, principles, practices, and literature of Hinduism, Buddhism, Confucianism, Taoism, Shinto, Zoroastrianism, Judaism, and Islam. The strength and weakness of the various faiths, and their present vitality. Areas of possible or actual conflict and co-operation.

TEXTS: Noss, *Man's Religions* (Macmillan).

Ballou, *World Bible* (Viking Press).

Evening Division: 1959-60 (lectures two hours a week).

Mr. Eckstein

RELIGION 350. *Philosophy and Religion*

See course description and details under Philosophy 350, p. 150.

Day Division: 1959-60 (seminar two hours a week).

RELIGION 370. *Christian Ethics and Society*

The ethical teachings of Biblical Judaism, Jesus and the early church, and major types of interpretation of Christian ethics. A number of problems of principle will be studied in detail, for example, law and love, agape and eros, the freedom of man and the sovereignty of God; and a number of problems of social responsibility, for example, nationalism and war, democracy and dictatorship, Christianity and the rise of capitalism, Christianity and communism.

PREREQUISITE: Permission of the department.

Day Division: 1959-60 (lectures two hours a week, group discussions one hour a week).

Professor Read

RELIGION 390. *Seminar: The Nature and Destiny of Man*

With the participation of members of faculty from the sciences, social sciences and humanities as well as religion, a critical examination will be made of present and potential contributions of the various disciplines either in conclusions or methodology to an understanding of the nature of man himself and his appropriate destiny.

PREREQUISITE: Recommendation of a participating member of faculty and permission of the department.

Day and Evening Division: 1959-60 (two hours a week).

RUSSIAN

Lecturer J. G. Garrard, B.A.

RUSSIAN 115.

Introductory course, the aim of which is to ensure an adequate grasp of the mechanics of Russian.

TEXTBOOK: Elementary Grammar, Parts I, II, by Potapova (Moscow, 1954, 55).

Undergraduates will supplement their study of the above grammar by reading simplified modern texts, and by using language laboratory equipment.

Day and Evening Divisions: Annually (three hours a week, plus one hour laboratory).

RUSSIAN 215.

This course may be taken only by undergraduates who have completed course 115, or (under exceptional circumstances) have permission of the Department. The course consists of a brief survey of Russian literature and culture over the past two hundred years. Undergraduates will read and criticize, following the method "explication de textes", a series of extracts from Russian and Soviet authors, from Lomonosov to Pasternak. Undergraduates will also receive practice in consecutive translation to and from Russian.

Day and Evening Divisions: Annually (three hours a week).

Note to 300 courses:—No 300 course may be taken by undergraduates unless they have completed course 215 or (under exceptional circumstances) have permission of the Department. All 300 courses are run according to the tutorial system.

RUSSIAN 301. *Nineteenth century prose fiction*

RUSSIAN 302. *The Russian novel since 1917*

RUSSIAN 303. *Russian drama of the nineteenth century*

RUSSIAN 304. *Soviet drama, with special reference to Mayakovsky*

RUSSIAN 305. *Pushkin and Lermontov*

Day and Evening Divisions: 1959-60 (lectures and tutorials to be arranged).

RUSSIAN 325. *The course of Russian history*

This course, which is designed to give an adequate historical background, must be taken by undergraduates majoring in Russian Language and Literature (with either French or German).

REFERENCE TEXTS: *Kurs russkoi istorii*, by Klyuchevsky.

Uchebnik russkoi istorii, by Platonov.

Survey of Russian History, by Summer.

History of Russia, by Pares.

RUSSIAN 350.

This course may be taken only by undergraduates majoring in Russian Language and Literature (with either French or German). In consultation with the Department, undergraduates will choose two authors, one verse and one prose fiction writer, whose major works they will then study in detail. Weekly tutorials to be arranged.

SOCIOLOGY

(including Anthropology)

Associate Professor; Chairman of the Department, 1959-60

J. A. Porter, B.Sc. (Econ.)

Assistant Professors Muni C. Frumhartz, B.A., A.M.
(on leave of absence, 1959-60)

Marcel Rioux, M.A., Dip. Eth.

Sessional Lecturers June H. MacNeish, Ph.B., A.M., Ph.D.

Alan Portigal, B.Sc., A.M.

Students who wish to major or to take Honours in Sociology are expected to fulfill the summer reading requirements.

Either Sociology 210 or 220 may, unless otherwise indicated, serve as pre-requisite for all other courses. They may *not* both be taken for credit.

PASS COURSE

Students who major in Sociology in the Pass Course are required to take at least five courses in the major field, including Sociology 210 or 220. They are also expected to select courses in related fields, the most important of which are: Biology, Economics, Geography, History, Political Science, and Psychology. The whole course program is to be chosen in consultation with the Department.

Students interested primarily in Anthropology are advised to take Sociology 320, 335 and 352, following Sociology 210.

HONOURS COURSE

Students who wish to take Honours in Sociology are expected to meet the general University regulations governing the Honours degree *and* to fulfill the following additional requirements within the Department:

1. Normally ten courses in Sociology, including:
 - a. Sociology 210 or 220, to be taken preferably in the second year
 - b. Sociology 360, to be taken normally in the final year
 - c. Sociology 362
 - d. Sociology 390, an Honours Thesis based upon supervised research.
2. A minor, consisting of three courses, in one of the allied social sciences (Economics, History, Political Science or Psychology).

The whole course program is to be worked out in close consultation with, and is subject to the approval of, the Department.

The Honours program may be entered from the Honours second year in the Social Sciences (see p. 81) or by transfer from the Pass Course if second-class standing has been obtained.

SOCIOLOGY 210. [1]. *Introduction to Sociology and Anthropology*

A comparative study of social institutions and social structure, aimed at analyzing basic forms of social relations, social groups, social control, and the conditions of social change. Attention is paid to both the simpler peoples and complex societies.

Day Division: 1959-60 (lectures two hours a week, group discussion one hour a week).

Evening Division: 1959-60 (lectures two hours a week, group discussion arranged).

Professors Porter and Rioux

SOCIOLOGY 220. *Sociological Analysis*

An examination of the major sociological approaches and concepts as applied to the study of human behaviour and social structure. Within a comparative and functional framework, primary attention is paid to the more complex contemporary societies.

Not offered 1959-60.

SOCIOLOGY 310. [6]. *Social Psychology*

(Offered 1959-60 in the Department of Psychology as Psychology 310.)

SOCIOLOGY 320. *General Anthropology*

A survey of the major fields of Anthropology — physical anthropology, archaeology, ethnology, social anthropology and linguistics. Consideration is given to both historical and scientific problems in Anthropology.

PREREQUISITE: Permission of the Department.

Not offered 1959-60.

SOCIOLOGY 335. *Culture Contact and Change*

A consideration of the nature of cultural change, including a survey of the kinds of racial and cultural contacts and their consequences.

PREREQUISITE: Sociology 210 or 220.

Not offered 1959-60.

SOCIOLOGY 345. *The Ethnography of French Canada*

A course designed to present an anthropological analysis of the French Canadian way of life including major elements such as politics, religion, social structure, cultural values and literature. This ethnic group will be considered both in its historical development and present situation with the aim of understanding it from a global point of view.

PREREQUISITE: Sociology 210 or 220 or permission of the department.

Day and Evening Divisions: 1959-60 (lectures two hours a week, group discussion arranged).

Professor Rioux

SOCIOLOGY 350. *Tutorial in Sociology or Anthropology*

A course designed to permit a student to pursue his interests in a particular area of Sociology or Anthropology. During the course the student will prepare papers as the basis of discussions with his tutor.

PREREQUISITES: Sociology 210 or 220 and permission of the Department.

Day and Evening Divisions: Annually (tutorial hours arranged).

Members of the Department

SOCIOLOGY 355. *Statistical Methods in the Social Sciences*

(Offered in the Department of Economics as Economics 320.)

SOCIOLOGY 360.[2]. *Sociological Theory*

The first part of the course surveys the scope of modern Sociology and the history of sociological theory, with special reference to the contributions of Marx, Durkheim, Pareto and Weber. The second part examines several substantive areas of Sociology (i.e., social structure, formal and informal organization, social stratification, social change) from the standpoint of systematic theory.

PREREQUISITE: Sociology 210 or 220 and preferably an additional course in Sociology.

Day Division: 1959-60 (Seminar two hours a week).

Evening Division: Not offered 1959-60.

SOCIOLOGY 362. *Social Research*

Lectures, tutorial meetings and exercises dealing with sociological method and, more particularly, with the techniques of social research. Special attention is paid to sampling, questionnaires and interviews, observational techniques, sociometry, personal documents, and content analysis. During the course the student will apply these techniques to some specific research project of his own.

PREREQUISITE: Sociology 210 or 220 and permission of the Department.

Day and Evening Division: 1959-60 (lectures and tutorials two hours a week).

Members of the Department

SOCIOLOGY 364. *Sociology of Political Behaviour*

An examination of sociological contributions to the study of political behaviour and of the relations between politics and the social structure. The areas of primary interest include: the determinants and role of public opinion, the politically relevant aspects of the media of mass communication, voting and other forms of political participation, the internal politics of parties and other associations, and the structure and functions of social and political movements.

PREREQUISITE: Sociology 210 or 220 or the permission of the instructor.

Day and Evening Divisions: 1959-60 (lectures two hours a week, group discussion arranged).

SOCIOLOGY 365. *Urban Society*

An examination of urbanism as a way of life. The ecological perspective, dealing with land use, population characteristics, and functional relations. The urban society as a form of social organization. The urban personality, urban institutions, and the problems of social control.

PREREQUISITE: Sociology 210 or 220.

Not offered 1959-60.

SOCIOLOGY 366. *Sociology of Work*

A study of the sociological aspects of work in contemporary society, with attention also to comparative analysis and historical trends: the social organization of modern industry and business, sociological analysis of selected occupations, and the relation between occupational activities and organizations and their social and institutional setting.

PREREQUISITE: Sociology 210 or 220 or the permission of the instructor.

Day Division: Not offered 1959-60.

Evening Division: 1959-60 (lectures two hours a week).

SOCIOLOGY 368. *Sociology of Power and Stratification*

An analysis of political power, institutions and parties based on empirical studies of political elites. The relationships between political, economic, and social power. The psychology of political movements. Criteria of social class and social status. Relationships between social class and economic and political systems. Social mobility. Examination of various class and caste systems and their ideologies.

PREREQUISITE: Sociology 210 or 220.

Day Division: Not offered 1959-60.

Evening Division: 1959-60 (lectures two hours a week, group discussion arranged one hour a week).

Professor Porter

SOCIOLOGY 370. [5]. *Sociology of the Primary Group*

An examination of small face-to-face groups and their relationship to the social structure of the larger society. Particular attention will be paid to the family, children's play groups, juvenile gangs, and the industrial working group.

PREREQUISITE: Sociology 210 or 220.

Day Division: Not offered 1959-60.

SOCIOLOGY 390. *Honours Thesis*

At the end of the final year an Honours candidate will be required to present a major essay based upon a supervised research project. The subject for research will be arranged early in the year in consultation with the Department and an advisor will be assigned. The student will be orally examined upon his thesis after its submission.

PREREQUISITE: Final-year Honours candidacy.

Day Division: Annually (tutorial hours arranged).

Members of the Department

Discontinued Courses

	<i>Last offered</i>
SOCIOLOGY 320. [3a]. <i>Race and Culture Contacts</i>	1955-56
(See instead Sociology 335).	
SOCIOLOGY 330. [4b]. <i>Archaeology and Ethnology</i>	1955-56
SOCIOLOGY 340. [7]. <i>Human Origins</i>	1957-58
SOCIOLOGY 352. <i>Tutorial in Anthropology</i> (Now combined with Sociology 350).	1958-59
SOCIOLOGY 367. <i>Social Class and Stratification</i>	1954-55
(Now combined with Sociology 368).	

SPANISH

Lecturer J. C. Forster, M.A.

SPANISH 115. *First-year University Spanish*

A course designed to give a sound basic knowledge of the language. The fundamentals of grammar will be covered, with the emphasis on idiomatic, spoken Spanish. Reading in the second half of the course is designed to create fluency and confidence and to build up vocabulary.

TEXTS: Hills, Ford and Rivera, *Brief Spanish Grammar for Colleges*
Cano and Sáenz, *Easy Spanish Plays*

Day Division: 1959-60 (lectures and reading four hours a week).

Mr. Forster

SPANISH 210. *Second-year University Spanish*

An introduction to the history of Spanish literature and civilization, with more advanced reading.

TEXTS: Ugarte, *España y su Civilización*
Kasten and Neale-Silva, *Lecturas Amenas*

Day Division: 1959-60 (lectures three hours a week).

Mr. Forster

SPANISH 325. *The history, literature and thought of modern Spain*

Lectures on the most significant figures of nineteenth and twentieth century Spain and their background. Reading and group discussion of selected modern authors.

PREREQUISITE: Spanish 210 or permission of instructor.

Not offered 1959-60.

SPANISH 335. *The Poetry and Drama of the Golden Age*

A continuation course at the third-year college level; reading and group discussion of selected poets and dramatists.

PREREQUISITE: Spanish 210 or permission of instructor.

Day Division: 1959-60 (reading and group discussion periods to be arranged).

Mr. Forster

Discontinued Courses

	<i>Last offered</i>
SPANISH 3. <i>Commercial Spanish</i>	1950-51
SPANISH 4. <i>Third-year College Spanish</i>	1951-52
SPANISH 5. <i>Fourth-year College Spanish</i>	1951-52
SPANISH 11. <i>Beginners' and First-year College Spanish</i>	1951-52
SPANISH 51. [A]. <i>Beginners' Spanish</i>	1955-56
SPANISH 110. [1]. <i>First-year College Spanish</i>	1956-57

MASTER PLAN FOR CARLETON UNIVERSITY

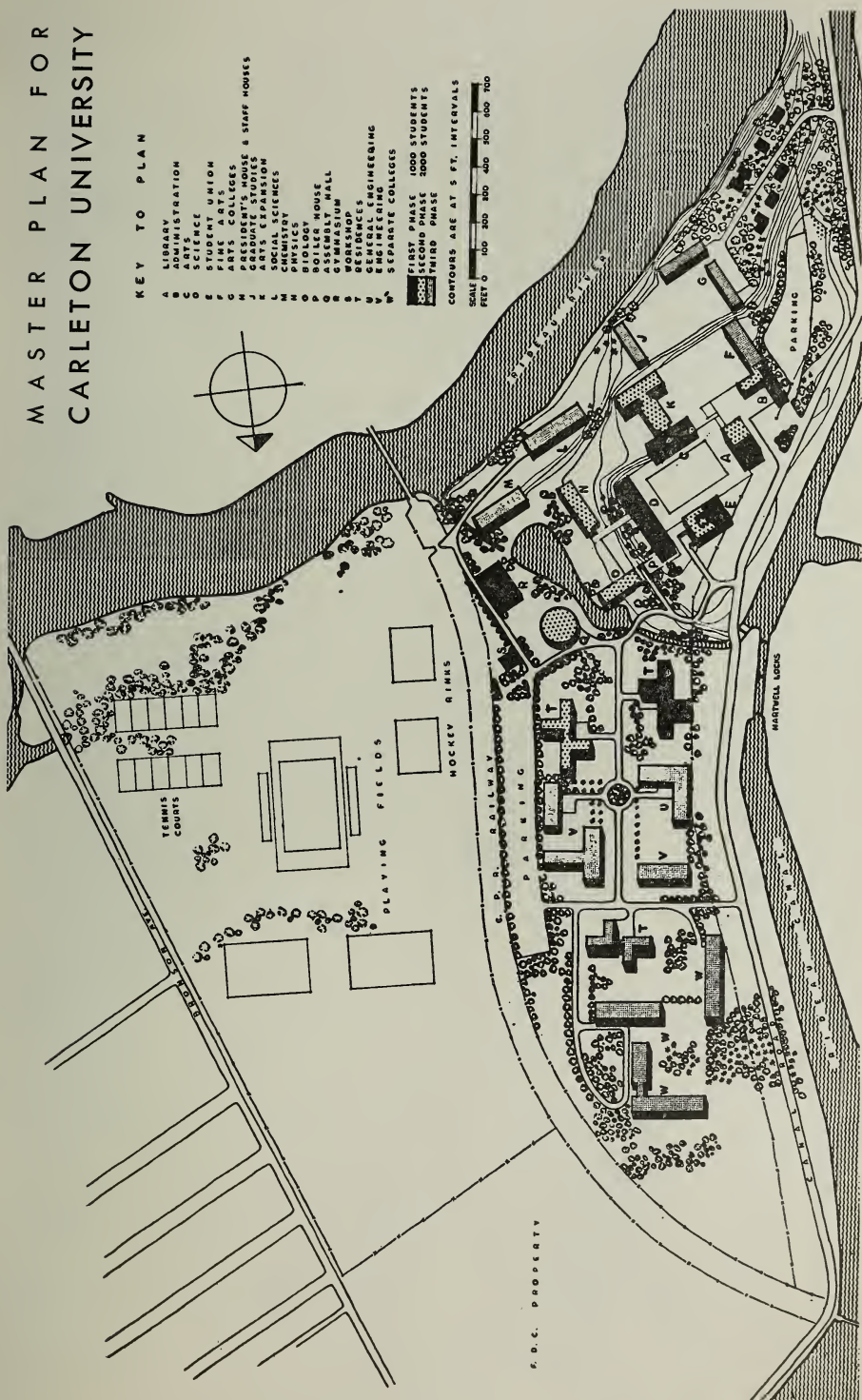
KEY TO PLAN

- A LIBRARY
- B ADMINISTRATION
- C ARTS
- D PHYSICS
- E STUDENT UNION
- F FINE ARTS
- G ARTS COLLEGES
- H RESIDENT HOUSES & STAFF HOUSES
- J GRADUATE STUDENT
- K ARTS EXPANSION
- L SOCIAL SCIENCES
- M ENGINEERING
- N PHYSICS
- O BIOLOGY
- P CHEMISTRY
- Q RESIDENT HOUSES
- R GYMNASIUM
- S ASSEMBLY HALL
- T WORKSHOP
- U LABORATORIES
- V GENERAL ENGINEERING
- W SEPARATE COLLEGES

FIRST PHASE 1000 STUDENTS
SECOND PHASE 2000 STUDENTS
THIRD PHASE

CONTOURS ARE AT 5 FT. INTERVALS

SCALE
FEET 0 100 200 300 400 500 700



F.D.C. PROPERTY

From I.O. '69

1959

JANUARY							FEBRUARY							MARCH							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
				1	2	3	1	2	3	4	5	6	7	1	2	3	4	5	6	7	
4	5	6	7	8	9	10	8	9	10	11	12	13	14	8	9	10	11	12	13	14	
11	12	13	14	15	16	17	15	16	17	18	19	20	21	15	16	17	18	19	20	21	
18	19	20	21	22	23	24	22	23	24	25	26	27	28	22	23	24	25	26	27	28	
25	26	27	28	29	30	31								29	30	31					
APRIL							MAY							JUNE							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
				1	2	3						1	2			1	2	3	4	5	6
5	6	7	8	9	10	11	3	4	5	6	7	8	9	7	8	9	10	11	12	13	
12	13	14	15	16	17	18	10	11	12	13	14	15	16	14	15	16	17	18	19	20	
19	20	21	22	23	24	25	17	18	19	20	21	22	23	21	22	23	24	25	26	27	
26	27	28	29	30			24	25	26	27	28	29	30	28	29	30					
							31														
JULY							AUGUST							SEPTEMBER							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
				1	2	3							1			1	2	3	4	5	
5	6	7	8	9	10	11	2	3	4	5	6	7	8	6	7	8	9	10	11	12	
12	13	14	15	16	17	18	9	10	11	12	13	14	15	13	14	15	16	17	18	19	
19	20	21	22	23	24	25	16	17	18	19	20	21	22	20	21	22	23	24	25	26	
26	27	28	29	30	31		23	24	25	26	27	28	29	27	28	29	30				
							30	31													
OCTOBER							NOVEMBER							DECEMBER							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
				1	2	3	1	2	3	4	5	6	7			1	2	3	4	5	
4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12	
11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19	
18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26	
25	26	27	28	29	30	31	29	30						27	28	29	30	31			

1960

JANUARY						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						
APRIL						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
MAY						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
JUNE						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
JULY						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						
AUGUST						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						
SEPTEMBER						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
OCTOBER						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					
NOVEMBER						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						
DECEMBER						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

UNIVERSITY OFFICE HOURS

WINTER SESSION

(September to April inclusive)

Monday to Friday	{ 9.00 a.m. to 12.30 p.m. 1.30 p.m. to 9.00 p.m.
Saturday	9.00 a.m. to 12.30 p.m.

SUMMER SESSION

(May to August inclusive)

Monday and Thursday	{ 9.00 a.m. to 12.30 p.m. 2.00 p.m. to 5.00 p.m. 6.30 p.m. to 8.30 p.m.
Tuesday, Wednesday and Friday	{ 9.00 a.m. to 12.30 p.m. 2.00 p.m. to 5.00 p.m.
Saturday	Closed all day.

LIBRARY HOURS

WINTER SESSION

Monday to Friday	9.00 a.m. to 10.15 p.m.
Saturday	9.45 a.m. to 4.45 p.m.

SUMMER SESSION

Monday and Thursday	{ 9.00 a.m. to 12.30 p.m. 2.00 p.m. to 5.00 p.m. 6.30 p.m. to 10.00 p.m.
Tuesday, Wednesday and Friday	{ 9.00 a.m. to 12.30 p.m. 2.00 p.m. to 5.00 p.m.
Saturday	Closed all day.

Between sessions the library is open in the daytime only.

